An Investigation into the Impact on Low Back Pain of an Educational Leaflet designed According to Lifestyle and Need

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Declaration

I, Deborah Yates, hereby declare that this thesis is my own work and has not been submitted for a degree at any other university. All resources I have used or quoted are acknowledged by a complete list of references.

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25th May 2008

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Abstract

Introduction: Low Back Pain (LBP) is a major health problem in many countries at considerable cost to the economy but there is little information available regarding LBP in South Africa. The prevalence and impact is likely to be similar to elsewhere. As South Africa has a small health budget and many health problems to attend to, a cost effective approach to the management of LBP would seem essential.

Education, information and advice have been shown to be effective in treating some aspects of LBP and a leaflet is a low-cost method of providing these. Apparently if a leaflet is designed according to the needs of a specific population, it has the potential to be more effective within that group. It has been suggested that the use of such leaflets should be investigated before more expensive treatment.

This study therefore aimed to develop an information leaflet about LBP that was appropriate for a resource poor community in Cape Town. The impact of this leaflet was then examined in a second stage of the project.

Stage One: Pamphlet development

Aim Stage One: To compile a lifestyle profile of people seeking help for LBP in a resource poor community and to use this profile, together with information about perceived needs of these people regarding LBP, to develop an information leaflet.

Method Stage One:

Sample: Adults (over the age of 18 years) of a resource poor community who attended the community health centre to consult the doctor for an episode of ALBP, and who agreed to participate in the study, were interviewed about their lifestyle and their perceived needs regarding information to help them manage their LBP.

Instrumentation: The Lifestyle Questionnaire consisted of 116 questions, which were based on information obtained from the literature review and the 20-year experience of physiotherapy of the researcher.

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Data Analysis Stage One: Descriptive analysis was used to create a profile of a "typical" person with LBP in that community from the information obtained. The most commonly perceived risk factors, together with suggested needs of the subjects regarding management of LBP, were used in conjunction with information from evidence-based research and guidelines, to guide the development of a population specific educational leaflet on LBP.

Results Section One:

The sample consisted of 50 subjects, of which 13 were male. The mean ages were 50.7 years (SD 14.0) and 54.1 years (SD 15.1) for males and females respectively. In terms of education, 15 of the subjects had only had 6 years or less at school and none had post-school education. The mean BMI was 32 (SD=5.3) for males and 31.1 (SD=6.3) for females. Using the Centre for Disease Control classifications, ten were classified as overweight and 18 were obese.

When asked what else they would like to know about LBP, 15 said they would like to know the cause and 12 how to relieve the pain. All subjects indicated they were interested in finding out *how the spine worked.* Forty-nine subjects (98%) *wanted* information on *lifting, exercise, pain management, how to sleep correctly, how to cough and sneeze*, and *how to change the way they did things when they had pain.* Forty-eight (96%) wanted to know when to *begin exercise*, and *how to manage daily tasks.* Forty-five (90%) wanted to know *how to manage their jobs when they had pain*, 43 (86%) *how to help themselves with the pain* and *how to keep fit.*

Conclusions and Recommendations Stage One:

The sample appeared to be representative of the population under study, although women were over represented. The prevalence of smoking and obesity was high and many reported high stress levels. A high percentage of domestic and other manual workers in this community and the nature of their activities put them at risk for development and exacerbation of LBP. The need for additional knowledge regarding the cause and prognosis of LBP was also expressed and evident, as few people knew what to expect with regard to the likely outcome of their pain. The need for education and an information sheet custom designed for this population emerged as a clear priority.

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Stage 2: Testing the effectiveness of the pamphlet

The second stage of the study was to determine whether the tailor-made information pamphlet was more effective than the existing pamphlet developed by a multi-national pharmaceutical company that was currently in use for patients with LBP at the clinic.

Aim Stage Two: A randomised control trial was used to compare the effectiveness and acceptability of the new information leaflet on LBP with the one currently in use.

Method Stage Two:

Sample: The sample was drawn from the same group as above and subjects were randomly assigned to either the newly developed information leaflet or the standard leaflet.

Instrumentation: A Pilot Study on 33 subjects was done to test the Measurement Instruments being used: Multidimensional Health Locus of Control Questionnaire, Roland-Morris LBP and Disability Questionnaire, The Stanford Health Distress Questionnaire and EQ5D.

Data Analysis: The Chi-squared test was used to establish if there was equivalence between the control and experimental groups in terms of gender and other demographic variables. The Mann-Whitney U test was used to determine if there was a significant difference between the outcome variables. The responses to the open-ended questionnaire to allow subjects to give feedback on the value of the instructions, was analysed descriptively.

Results: At baseline 83 subjects were interviewed, of which 42 were in the control group and 41 in the experimental group. Subjects were randomly assigned to each group. Fifty-nine subjects were female and ages varied from 19-76 with an average age of 46.6 years (SD 14.8). Sixty-six subjects returned for a follow up, 34 in the control group and 32 in the experimental group. The two groups were equivalent with regard to gender distribution, age, frequency of obesity, smoking habits, occupation and educational levels.

The new leaflet did not appear to have a superior impact on the outcome measures chosen compared to the leaflet already in use.

The participants of both the experimental and control groups demonstrated a significant decrease in impairment and functional limitations over the course of the study, but there were no significant change in levels of anxiety or levels of discouragement, worry, frustration and fear of future pain.

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Regarding the use of Information Leaflets -approximately 90% in each group reported reading the leaflet. Eighty-two percent of patients said the leaflet (either one) was useful and 18% either that it was not useful, they had not read it or could not remember. When asked what was useful about the leaflet, of those that had found it useful, 27% specified the advice on posture, 17% lifting and/or bending and 23% exercise. When asked what other information they thought would have been useful to include in the leaflet, or information that they might have wanted to know about to help their pain – 31 (47%) did not have any suggestions/said no more information was required.

Positive comments included that the leaflet was helpful and good; that relatives had been encouraged to read it, the leaflet was in a safe place and that it had not been thrown away. Other positive feedback included that the leaflet had made subjects more careful with their backs.

Conclusions and recommendations: Whereas the participants did report a decrease in their pain and functional symptoms in the short term, there is no evidence from this study that an information leaflet, distributed without specific advice and discussion, regardless of whether tailor-made or not is effective in assisting patients to manage their LBP.

Four weeks after distribution of the leaflet, subjects still reported high levels of distress and did not feel any more in control of the pain, or perceive themselves to be able to function better, need to take fewer drugs or see the doctor less suggesting that the information leaflet was not effective in helping them to manage their LBP. Research indicates that health distress is predictive of future functional disability with regard to general health and specifically with regard to LBP. There would seem to be an urgent need to make more active treatment, such as has been shown to be effective in other countries, available to the residents of this resource poor area. The Information Leaflet produced might serve as a useful adjunct to this intervention and it would seem courteous to distribute pamphlets that include examples and pictures that are relevant to the patients.

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Glossary and abbreviations

LBP	Low back pain	Defined as pain originating from the back and defined in an area bounded by the 12th thoracic vertebra and 12th ribs superiorly, the gluteal folds, inferiorly, and the contours of the trunk laterally.
CLBP	Chronic low back pain	Pain that has lasted for more than 3 months becomes *Chronic LBP* (George 2002).
ALBP	Acute low back pain	*Acute LBP (ALBP)* can last for up to six weeks (George 2002).
VAS	Visual Analogue Scale	Used in EQ-5D as an index of self-perceived HRQoL
VASp	Visual Analogue Scale to measure pain	
EQ-5D	European Quality of Life – 5 domains	Generic Measure of HRQoL
RMQ	Rowland Morris Disability Questionnaire	Designed specifically to monitor functional ability in persons with LPB
SHDQ	Stanford Health Distress Questionnaire	Measure of Health Distress
MHLC	Multidimensional Health Locus of Control Questionnaire	Measure of perceived control of problem
HRQoL	Health related quality of life	

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1. Introduction

1.1 Background

Low back pain (LBP) has been found to be a significant problem in many countries (Goubert, Crombez et al. 2004; Jin, Sorock et al. 2004; Walker 2004). It is not a life threatening problem, but has been described as an enormous economic burden – in terms of the amount of days of work that are lost with sick leave, drug prescription and health service utilization (Lutz, Butzlaff et al. 2003; Woolf and Pfleger 2003; Korthals-de Bos, van Tulder et al. 2004; Luo, Pietrobon et al. 2004). Lifetime incidences of LBP can be as high as 80% (Santos-Eggimann, Wietlisbach et al. 2000) and in many countries a large percentage of the health budget is utilized directly and indirectly in costs relating to LBP (Santos-Eggimann, Wietlisbach et al. 2000). Disability and lost working hours due to low back pain are enormous. The United States and the United Kingdom, spend large amounts of money each year on costs associated with LBP however these countries have different economies when compared to South Africa (Xarchas and Bourandas 2003; Wikipedia 2007; World Health Organisation 2003) which are clearly illustrated when represented in table format (Table 1) (World Health Organisation 2003).

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Table 1: Health Care Expenditure per Capita in US dollars in 2003.

Country	Total Health Expenditure per Capita 2003
United States	5711
France	2902
Australia	2874
Sweden	2704
United Kingdom	2389
New Zealand	1893
South Africa	*669*
Brazil	597
Saudi Arabia	578
Russian Federation	551
Iran	498
Botswana	375
China	278
Zimbabwe	132
India	82
Uganda	75
Iraq	64

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An extensive literature search revealed that there is no information available on the prevalence of low back pain in South Africa. There is no reason to suppose it is any less of a problem than it is in any of the other countries in which it has been investigated, consuming resources and causing people to take time off work.

It was not possible to find statistics for healthcare expenditure specifically on LBP for countries with smaller healthcare expenditure such as countries in Africa but it is likely that the cost to society of LBP is high. It has been suggested that assessment of healthcare needs of a country are important in planning appropriate care (Urwin, Symmons et al. 1998; Korthals-de Bos, van Tulder et al. 2004; Luo, Pietrobon et al. 2004). Understanding the possible problem of LBP could form part of that assessment for South Africa. Successful and cost-effective methods of managing LBP need to be identified and utilised in order to reduce the burden on the economy, through reducing money spent on treatment and reducing the working days lost due to episodes of LBP.

LBP is not a new problem and has been a subject of investigation for many hundreds of years - as far back in history as records show (Xarchas, C. and J. Bourandas 2003). These records indicate that LBP may have always been part of human life and is not unique to the modern world, or any new type of physical activity or psycho-social problem. What is difficult to ascertain however, is whether the percentages of people who suffer from LBP are increasing.

The literature on aetiology is diverse. The important relationship between genetics and the occurrence of LBP has been emerging, as has the possible role of damage and wear and tear (An, Anderson et al. 2004; Battie, Videman et al. 2004; Hartvigsen, Christensen et al. 2004; Roughley 2004; Stokes and Iatridis 2004; Urban, Smith et al. 2004; Videman, Tapio and Nurminen 2004; Kjaer, Leboeuf-Yde et al. 2005; Peng, Hao et al. 2006). Alongside this physical focus there is another field receiving much attention – the psychosocial contributions especially in the development of chronic low back pain (CLBP) (Foppa and Noack 1996; Bildt Thorbjornsson, Alfredsson et al. 1998; Hoogendorn, van Poppel et al. 2000; Takeyachi, Konno et al. 2003; Takahashi, Kikuchi et al. 2006). CLBP appears to be a bigger problem than acute low back pain and consumes more money (Foster, Thompson et al. 1999; Maniadakis and Gray 2000).

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Research has been varied regarding the treatment of LBP but it seems that despite this, the best treatment for low back pain has yet to be identified (Lutz, Butzlaff et al. 2003). A study reviewing literature on current guidelines for the management of LBP found nine suitable full-text English Language documents that included guidelines from the United States, United Kingdom, Netherlands, Australia and New Zealand. This study found that there were many differences in these guidelines that ranged from their quality to their recommendations (Grimmer, Milanese et al. 2003). The New Zealand Acute Low Back Pain Guide (New Zealand Accident Compensation Corporation. New Zealand Acute Low Back Pain Guide Sept 2005) recommends that a person suffering from an episode of ALBP should stay active, remain at work and use analgesia. Spinal manipulation (by trained practitioners) is also recommended. The importance of explanation to and re-assurance of the patient is emphasised. There are also guidelines for risk factors for long-term disability and work loss from LBP that relate to psychosocial issues, with information on how to identify and manage these. The guidelines of the NZALBPG are similar to those published by the National Health Service in the United Kingdom (N.H.S., *PRODIGY Guidance - Back pain – lower 2005)* and the Institute for Clinical Systems Improvement (ICSI) (The Institute for Clinical Systems Improvement, *Adult Low Back Pain.* 2005) in the United States although the United States guideline does not include a recommendation for spinal manipulation.

Providing education, information and advice in one form or another are aspects of treatment for LBP that have been found to be useful (Cherkin, Deyo et al. 1996; Schenk, R. J., Doran et al. 1996; Burton, Kim A, Waddell et al. 1999; Little, Roberts et al. 2001; Roberts, Little et al. 2002; Rivero-Arias, Gray et al. 2006) and it has been recommended that advice/information should be assessed as a priority as an intervention strategy for LBP as this is simple and cost-effective (Little, Roberts et al. 2001). Education itself can take many forms (Schenk, R. J., Doran et al. 1996). It can be verbal and unstructured such as casual conversation at the end of a consultation with a health professional, or part of a specific program with practical demonstration of such things as suitable lifting techniques. Videos and written material have also been used with varying degrees of success and failure. The content of informational/educational material has been also been investigated (Moseley 2003). Information about the possible causes of LBP and its treatment and management has been put in writing (Hazard, Reid et al. 2000; Little, Roberts et al. 2001; Karjalainen, Malmivaara et al. 2003) and presented to patients with LBP. Of all the treatments available, this is perhaps the least expensive and appears to be more effective when it

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is related to the expressed needs of the patient (Klaber Moffett, Torgerson et al. 1999; Roberts, Little et al. 2002; Liddle, Baxter et al. 2004).

South Africa has a two-tier health system, a private tier, which is accessible only to those with the financial means to subscribe to medical aid, and a public tier available to the poorer majority of the population. Unfortunately not all services are available at every level of the public health system and in many areas patients may not have access to rehabilitation services. It is therefore not possible to follow the guidelines for management of LBP or even some of the more successfully researched treatments for LBP as discussed above. Feasible alternatives thus need to be explored. Of all the interventions that have been found to have some benefit, provision of information in the form of a leaflet is perhaps the least expensive. As mentioned previously, it is not clear whether the complex mechanisms, which contribute to LBP, can be managed successfully with this approach. Health education itself is a complex issue with many different components to consider, but it has been suggested that it is a fundamental right of a patient to receive education about their specific health needs.

In order to begin to investigate and address possible methods of treating LBP in South Africa, this study was implemented in a resource poor community after consultation with the doctor at the local clinic when it became apparent that there were many patients visiting the clinic for help with low back pain. The current intervention for this problem consisted of medication in the form of anti-inflammatory drugs and the distribution of a leaflet produced by a drug company with advice on dealing with LBP. There is little information about LBP in South Africa. A resource poor community was chosen to investigate this possible problem as people within this community have few available options regarding treatment of any medical condition.

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1.2 Aim

Research shows that information about LBP is more effective when presented in accordance with what people with LBP feel they need to know. The first aim of this study was to find out more about the lifestyle of people presenting with a complaint of LBP at a resource poor community in South Africa and their needs regarding LBP. In order to achieve this aim, it was necessary to investigate the demographic characteristics, including occupational requirements, identify common risk behaviours relating to LBP and to establish what information was felt to be most useful by patients who attended the clinic for management of LBP. This information was then incorporated into a custom designed information pamphlet. The second aim of the study was to examine whether distribution of this custom designed pamphlet would lead to a decrease in symptoms relating to LBP over a period of time.

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1.3 Objectives

The overall objective of the project was to develop an information sheet for people suffering from acute low back pain in a resource-poor township area (Community X) according to lifestyle and need, and to establish the impact this information had when compared to the sheet currently in use. Specific objectives were:

1. To describe the demographics, risk behaviours and lifestyle choices of people seeking medical attention for LBP at a local clinic.

2. To collect information about the occupations and physical activities performed by these people in the course of their daily life.

3. To evaluate patients' levels of understanding regarding their LBP and their needs regarding information related to LBP.

4. To use the above information together with information obtained from recent literature to draw up an information leaflet on LBP.

5. To determine if the use of the custom designed leaflet would lead to a significant change in the following parameters after four weeks:

   a. The level of pain as measured by a visual analogue scale (VASp).

   b. The health related quality of life as measured by the EQ-5D (EQ5D)

   c. The functional ability as measured by the Rowland Morris Disability Questionnaire (RMDQ).

   d. Health distress as measured by the Stanford Health Distress Questionnaire (SHDQ).

   e. The level of perceived control over the problem as measured by the Multidimensional Health Locus of Control Questionnaire (MHLC).

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2. Literature Review

The literature review was conducted through literature searches using: "Pub Med", PEDro", and "Google.com". The following journals in the library of the University of Cape Town were also searched: SPINE, Physical Therapy, Physiotherapy, and The Australian Journal of Physiotherapy (January 1988 to July 2007). Key words entered covered many topics on low back pain, including: treatment, epidemiology, prevalence, predictors, causes, statistics, physiotherapy, economic burden, management, outcome measures, intervertebral disc, exercise, stress, muscle, ergonomics, education, health literacy and health distress.

There is little information about LBP in South Africa. This literature review aims to explore the significance and prevalence of LBP as well as possible causes and treatments in order to conceptualise the challenge of managing LBP in a cost-effective way.

Back pain has been a problem for many centuries with literature suggesting that both Hippocrates and Galen, were involved in work on spinal pathology (Xarchas and Bourandas 2003). Hippocrates, who died in 370 BC and was considered to be one of the outstanding figures in the history of medicine (Wikipedia 2007) was thought to have been a major investigator of spinal problems and treatments. Many of the terms currently in use in connection with the spine are possibly derived from his work including terms such as kyphosis, lordosis and scoliosis (Xarchas and Bourandas 2003). Galen (AD 129 – 200) was a prominent ancient Greek physician, whose theories dominated medical science for over 1300 years (Wikipedia 2007). Evidence of this early literature perhaps highlights the importance and persistence of LBP in the human race over the centuries.

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2.1 Epidemiology

LBP is a common health problem (Santos-Eggimann, Wietlisbach et al. 2000; Walker 2004; Takahashi 2006). This is reflected in the 2003 WHO report on the burden of major musculoskeletal conditions which records LBP as the most prevalent of four major musculoskeletal conditions, followed by osteoarthritis, rheumatoid arthritis and osteoporosis (Woolf and Pfleger 2003). This report reviewed "existing data" as part of a "Bone and Joint monitor project" but no specification is made in regard to the methodology used in the collection of data. This data does however provide some interesting insight into the high prevalence and burden on the world as a whole of musculoskeletal conditions, by looking at the incidence and prevalence of these conditions, the population groups at risk, time trends and impact of each condition. It is suggested that musculoskeletal conditions have a major impact on society "due to frequency, chronicity and resultant disability" and that this impact is expected to increase "predominantly in less-developed countries" because of the increase in the age of the world's population.

Many studies have looked specifically at the prevalence of low back pain in different parts of the world – including developed (Santos-Eggimann, Wietlisbach et al. 2000; Catala, Reig et al. 2002; Jin, Sorock et al. 2004) and rural communities (Worku 2000; Hoy 2003; Jelsma, Mielke et al. 2002). However, there is little information available about LBP in Africa or South Africa. The methodology of many of the studies that have been conducted differs, as do the definitions used regarding LBP that makes comparison of data difficult.

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Comparing three different studies carried out in Europe highlights this point. For example in Italy, the In Chianti study (Cecchi 2006) was carried out with 1299 subjects whose names were obtained from two city registries in Tuscany. The subjects were all over the age of 65 and the classification of back pain referred to the presence of pain *every day in the previous 12 months.* These subjects had a home interview and were examined by a gerontologist and had an assessment by a physiotherapist. The results indicated a presence of back pain in 31.5% of this population. By comparison, another study in Spain, took the names of residents of the electoral region of Catalonia (Bassols, Bosch et al. 1999) for a survey of pain complaints. One thousand nine hundred and sixty four people of 18 years of age and older, were included in this telephonic survey, and this time pain was described as *any pain complaint during the last 6 months* with no reference to duration. In this study 50% of the survey indicated that they had had back pain in this time. In Switzerland, 3227 people from two areas of Switzerland taking part in a survey on cardio-vascular disease for the World Health Organisation answered a supplementary questionnaire on LBP. In this study the pain was classified according to *the amount of pain experienced in the previous year: 1-7 days, 8-30 days, pain for more than 30 days but not daily and pain for more than 30 days daily.* This study also separated results for gender and found a 1-year prevalence rate of 50.4% in men and 43.1% in women. In these three studies the classification of back pain differs from "presence", "any back pain in the last six months" and lastly time specific episodes of "back pain in the last year". The age of the populations also differed, as did the method by which the data was collected. All of these factors make comparison of the prevalence rates difficult.

There are few studies available showing data of LBP in Africa and other countries with populations who live in resource poor communities. In one study conducted in the southern African kingdom of Lesotho, information about LBP was collected from 4001 mothers of children under 5 years of age who were participants in another study. At the time of answering the questionnaire, 10.12% of the mothers had *severe LBP*, 12.82% *moderate LBP* and 35.54% *mild LBP* (Worku 2000). No mention was made of the length of time subjects had experienced this pain. Again the population group differed from those studies quoted from Europe in terms of age, gender and the description of pain was also different making comparisons about LBP in Africa and Europe using the results from this study difficult.

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When collecting information about LBP there are differences between studies regarding the time period that subjects have had LBP. For example, studies may look at the *point prevalence* of LBP (the number of people suffering from LBP at a specific point in time); or at the specific duration of LBP: for example a 1-month, 6-months, 1-year or a longer period of time. Different studies have indicated that the 12-month prevalence of acute LBP could vary from 83.96% in rural Tibet (Hoy 2003), to 73% in Wales (Chartered Society of Physiotherapy 2005), 67.6% in Australia (Walker 2004), 63% in London (Chartered Society of Physiotherapy 2005), 53% in Scotland (Physiotherapy 2005), 50.9% in Spain (Catala, Reig et al. 2002), 50% in China, (Jin, Sorock et al. 2004) 46.75% in Switzerland (Santos-Eggimann, Wietlisbach et al. 2000), 44% in the Netherlands (Faber 2006), 31.5% in Italy (Cecchi 2006) and 21% in Hong Kong (Leung 1999). It is possible that these figures differ due to differences in the demographics of the populations sampled in each of the studies. There may have also been differences in the way the data was collected.

There appears to be a lack of literature of national studies on LBP. Studies often focus on specific communities that may be quite diverse. For example, in 2005 a study was published on the "Prevalence of Low Back Pain in Alpine Ski Instructors" (Peacock, Walker et al. 2005) a group that may not be representative of the population of the area. There have also been studies on groups of nurses, elite athletes, construction workers, people habiting cities or rural communities in remote regions such a Tibet, truck drivers and sedentary workers. Studies on back pain seem to have been carried out on every conceivable population type making the information available on LBP interesting but this diversity of information serves to highlight that no group seems exempt from LBP.

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The methodology used for studies on LBP is often different. While some studies collected information over the telephone, others used face-to-face interviews or required subjects to fill out answers on a questionnaire. Often the requirement for the duration of pain being experienced in each study was also different. Despite these differences in several areas of methodology in the studies exploring the prevalence of LBP, it has been suggested that 18 % of the world's population is most likely to be experiencing LBP at any given time (Peng 2006). Each of these methods has advantages and disadvantages.

Low back pain is currently categorised by the World Health Organisation, according to time: *Acute LBP (ALBP)* can last for up to six weeks and pain that has lasted for more than 3 months becomes *Chronic LBP (CLBP)* (George 2002). What is important to note is that the recurrence rate of ALBP is 50% in the 12 months following the first episode (Klaber Moffett, Torgerson et al. 1999) and 79% of people with a new episode of LBP develop CLBP (Smith, Blair, Elliot et al. 2004) with15-20% of patients having significant activity limitation one year after receiving care for LBP (Strong L.L. 2006). CLBP is more difficult to treat and its outcome less certain (Mohseni-Bandpei, Critchley et al. 2006).

It has been suggested that rather than using time periods to define the classification of LBP, it could be classified into subgroups related to the different types of pain presented. This may allow treatment to be more effectively directed. At present there is no classification of LBP according to the many suggested possible causes of LBP (Dankaerts 2006).

With its high prevalence rates, LBP has been found to be a considerable economic burden in many countries (Webb, Brammah et al. 2003; Smith, Blair, Elliot et al. 2004) and as a result it is an important aspect of public health care. In many countries large sums of money are attributed to the cost of treatment of those with LBP. These costs may be direct costs such as visiting the doctor, taking prescribed medication and treatment by a physiotherapist, or indirect costs such as working hours lost due to sick leave. In order to enable comparison of expenditure on LBP in different countries expenditure should be placed in context of the total expenditure on healthcare of the country concerned, for example, in 1998, 28% of health care expenditure of the USA was attributed to LBP (Luo, Pietrobon et al. 2003).

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2.2 Low Back Pain in South Africa

There is a paucity of published information about LBP in South Africa. There is very little information on the incidence and cost of LBP and there are no statistics about the incidence, prevalence and economic burden of LBP. The South African Internet sites of the Medical Research Council, Occupational Health and Safety, National Research Foundation, Human Sciences Research Council, Health Systems Trust and the government statistics websites have little or no information on LBP. The Burden of Disease Unit of the Medical Research Council relies on the African estimates of the Global Burden of Disease study to estimate the disability-adjusted life years (DALYs) attributable to musculo-skeletal disorders. However, as local data are not available, the specific contribution of LBP to these figures is not known.

The last census in 2001 indicated that South Africa has a population of 45 million people (Wikipedia 2007) with 88% of the population relying on the government for healthcare. South Africa also has a high rate of unemployment (statistics vary from between 30-42%) (HSRC 2003) and spends 3% of the GDP on public healthcare (15% of total government expenditure). Another 4.5% of the GDP is spent on private healthcare from private sources (HSRC 2003; Martin 2003). Although South Africa spends less than other countries worldwide per capita on healthcare (Table 1) it spends more money than any other country in Africa on healthcare.

South Africa's resources for health expenditure are scarce (HSRC 2003) and there are other significant health care issues. South Africa has a high incidence of HIV/AIDS and AIDS related illnesses. It has been suggested that South Africa has more people with HIV/AIDS than any other country (Wikipedia 2007). In 2001 the HIV prevalence of individuals' aged 15-49 was reported to be 20.1% (HSRC 2003). The South African Chamber of Business estimated that in 2006, 5.4 million people had HIV/AIDS (Dorrington, Johnson, et al 2007). These high HIV/AIDS prevalence rates are reflected in the country's health expenditure figures as in the financial year 2001-2002 two thirds of public healthcare expenditure went to fund treatment of HIV/AIDS (Martin 2003).

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It is apparent then, that while LBP has been and continues to be widely researched in the rest of the world, not much work has been done to explore LBP in South Africa and not much is known about its prevalence in the greater South African society. Similarly the economic burden of LBP on the already stretched South African healthcare system has not been established.

2.3 Possible Causes of Low Back Pain

Many possible causes of LBP have been considered in different studies. It is perhaps useful to briefly look at some of these possibilities in order to try to begin to have some concept of the scope of the problem as it may exist in South Africa. However it must be kept in mind that if LBP is a problem in South Africa it cannot be presumed that the causes are similar to those established in other countries. Similarly treatments, which have been found to be effective in other countries, may not be effective in South Africa or these treatments may not be cost-effective or suitable in the South African context. These issues need thorough exploration and may not be clarified immediately.

The genetics of the individual, the biology and biomechanical relations of the spine and its components that allow us to be supported in all the activities of daily life in work and leisure have apparently shown specific factors that may contribute to LBP. The intervertebral disc, its responses to the passage of time and specific activities of daily life and its contribution to LBP has been the subject of much research. Other topics considered include age, gender, obesity, pregnancy, trauma, smoking, the presence of other diseases, culture, education, economic status, and stress. The types of jobs that we do, the types of postures we use during work, leisure activities and psychosocial aspects have also been considered in relation to LBP. If all these things can contribute towards LBP, an understanding of these aspects in a particular community may help towards an understanding of any possible presence of LBP in that community.

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One author has classified the causes of LBP into three categories: biologic, physical and psychosocial and indicates that each of these has their influence (George 2002). From a review of some of the more recent literature on LBP, it seems that both intrinsic and extrinsic physical and psychosocial factors such as those listed above may be relevant to LBP. However it appears that these factors may be inter-related making it difficult to specifically categorise any single cause.

A study published in 2006 looked at the content of research papers presented at the International Society for the Study of the Lumbar Spine (Wai, Vexler et al. 2006) This society focuses on research "as it relates to LBP", 589 abstracts from 25 countries from 1978 until 2002 were considered in terms of merit regarding their methodology with regard to use of validated questionnaires, blinded observers and sample size. Of the papers that had been presented, 43.3% were related to the intervertebral disc (a physical component of LBP), while only 7.3% fell into the category of psychology. While the large numbers of studies focusing on the role of the intervertebral disc in LBP could be an indication of the importance of this structure in the onset of LBP, it may be that this figure is merely a reflection of a research focus on the biological factors contributing to LBP.

With all these possible causes it is not surprising that it is difficult to give a specific diagnosis of the cause of LBP in an individual or group of people or produce evidence of a single successful treatment approach.

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Table 2: Possible causes of LBP

	Intrinsic	Extrinsic
Physical	Genetics, biology, biomechanics	Environment (work and leisure activities), obesity, wear and tear,
Psychosocial	Personality	Socio-economic status, stress, culture

2.3.1 Genetics

Genes determine specific individual biomechanics and biochemistry of the body. Research has suggested that some individuals may have specific genetic characteristics that make them more susceptible to LBP than others and that *Genetics* apparently play an important role in the development of LBP, directly and indirectly (Hartvigsen, Christensen et al. 2004).

Recent studies on substantial numbers of pairs of identical twins support the role of genetics as a contributing factor in the development of LBP (Hartvigsen, Christensen et al. 2004). As much as 23% of the "variability in occurrence" of low back pain in men between the ages of 70 and 102 was attributed to genetics in a Danish study completed with a subject base of 2,108 pairs of twins (Hartvigsen, Christensen et al. 2004). This information was gained as part of a larger study in which twins were interviewed about various aspects of health; however, the presence of LBP was assessed by only one question, asking if the interviewee had had LBP in the previous month. In addition no specific measurement instruments were used and as a result this is quite a limited analysis. Despite the limited methodological approach, the authors of this paper highlighted their opinion that the balance of "genetic susceptibility and the environment" affects LBP.

In 2004, a paper published in Spine, reviewed literature that was available on the epidemiology and genetic influences of lumbar disc degeneration (Battie, Videman et al. 2004). The authors argued the case that genetics had a "substantial" influence on the presence of disc degeneration. They suggested that studies involving monozygotic twins and weightlifters show that the effect of extreme physical loading is only "modest". However they did agree that the environment is relevant but suggested that perhaps this role is additional to the underlying genetic factor.

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A 1988 case study compared wear and tear in the lumbar spine of close relatives of patients who had undergone surgery for damage to the Intervertebral Disc (IVD) with subjects complaining of LBP who had no family history of surgery for disc damage. The study found that there may be a genetic connection to disc damage (Matsui, Kanamori et al. 1998). Thus it appears possible that the biological processes involved in disc wear and tear may be genetically determined and as a result the disc in certain individuals may be less able to withstand the stresses and strains of heavy lifting (Videman 2006).

2.3.2 The Intervertebral Disc

There is a lot of published information that gives weight to the possible role of the IVD in LBP; however it must be emphasised that the contribution of the IVD to LBP is unclear. Information regarding the IVD may be of interest to those who manage and treat LBP as well as those who experience LBP and it will be noted later that when people who have LBP go to the doctor, they go primarily to seek a diagnosis, however, as will be discussed later, there are some schools of thought amoungst health professionals dealing with LBP that advocate downplaying the role of actual physical damage (such as may occur in the IVD) as a cause of LBP when giving information to people about their LBP as it has been suggested that this approach may hinder recovery.

Several theories exist regarding the factors that may result in IVD dysfunction, which may cause LBP. These were expanded upon in a 2004 edition of the journal SPINE that focused on IVD degeneration and its role in LBP (Setton 2004; Stokes and Iatridis 2004) and these theories include the influence of cellular degeneration, genetics, biomechanical influences, exercise and nutrition of the IVD.

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It is not entirely clear how much degeneration of the IVD itself could be painful and thus result in LBP (Howard, Anderson et al. 2004). One of the possible causes of pain may be the release of chemicals into the tissues surrounding the disc *if the disc is torn.* These suggestions come from a study published in this same 2004 edition of Spine conducted on 157 male cadavers. Discograms were performed (a procedure where barium sulphate is injected into a disc) to assess the severity of any tears and/or degeneration in the discs of the lumbar spine. In this study the findings of the discographies were compared to answers from relatives who were questioned about any back pain their deceased relative might have had i.e. "did he have back pain and if so, how often?" Only cadavers of men employed at the time of their death were considered. The study found an association between reports of back pain and the severity of tear in the annulus fibrosis (Videman, Tapio and Nurminen 2004). Unfortunately the relatives of the deceased are not necessarily an accurate supply of information about back pain, for example a person may have back pain but may not tell anyone about it – or may not tell someone in the family about it.

A further study that considered pain and the IVD, also implicated the role of the IVD. In this study, discs from subjects undergoing discectomy for LBP were compared with apparently normal discs from cadavers. The authors reported that LBP could possibly be related to a tear of the annulus fibrosis rather than to bulging of the disc (Peng 2006). However, these results must be treated with caution. This study is limited because of its small sample size and possible lack of information regarding LBP in the control group (21 patients with LBP undergoing spinal surgery and 10 "control" or normal discs from only 5 fresh cadavers with no apparent history of LBP).

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It has been reported that 80% of spinal surgery is performed because of *disc degeneration* (Stokes and Iatridis 2004) but it is not known how successful this surgery is in relieving LBP. Degeneration may lead to other problems as the disc is more susceptible to further damage and is less able to withstand trauma (Stokes and Iatridis 2004). The level of the disc in the spine may predispose it to tearing (Battie, Videman et al. 2004; Videman, Tapio and Nurminen 2004) possibly because biomechanics at different levels result in different amounts of stress and strain. It is theorised that if a disc has been weakened by tears possibly caused by damage due to stress such as heavy lifting, the disc may herniate and extrude a large mass of disc substance, which may press on a spinal nerve root causing pain.

Instability of the spine has been indicated to occur in 20-30% of people with CLBP (Goldby 2006). It is possible that when a disc becomes badly damaged and/or worn with degeneration, it may also become unstable. Spinal instability that may occur as a result of damage to the IVD has been considered as a possible source of LBP. Instability results in changes in the biomechanics of the spine, which may compromise normal movement and as a result the small joints around the spine take some of the load the disc may have previously taken. With this change of loading, different muscles around the spinal cord are activated and patterns of movement of the muscles used in performing different activities are changed. This increase of pressure on the small intervertebral joints could be another source of pain.

It appears that the human spine and its associated components, particularly the IVD, while allowing human beings the freedom to move as they do in situations of work and play, may be vulnerable to ageing and injury. Arthritic changes, the destruction of the joint surface, inflammation and the formation over time of bony spurs or osteophytes may occur when a joint is subject to increased pressure. These osteophytes in the spine may cause pain if they impinge on a nerve root, (although this role is unclear (Battie, Videman et al. 2004)) but can also improve the stability of the spine, possibly by splinting the area around the unstable disc and restricting movement. Athletes who participate in shot-putting, high jumping and discuss throwing have been found to have more osteophytes than other athletes indicating a possible role of increased spinal loading in the process of disc degeneration (Schmitt, Dubljanin et al. 2004). It might be interesting to consider other aspects of potential causes of LBP in further studies of athletes and not just the biomedical causes.

The water content of the IVD may be another consideration in disc degeneration and damage. The water content of a disc apparently decreases with age making the IVD less able to withstand compressive forces (Setton 2004). Once the IVD is damaged it is apparently slow to heal which may further contribute to the process of degeneration (Roughley 2004).

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While it would appear that the IVD itself plays an important role in our understanding of LBP, it has yet to be established whether it is in fact damage or compromise of the IVD that ultimately causes LBP. While research discussed later in this review suggests that biological factors are not the only influence on LBP, their inclusion, as possible causative factors may still be relevant. Acknowledging the role of the IVD in LBP has resulted in several treatment approaches such as surgery to address damage. However, the role of these treatments in the South African context and exploration of whether such approaches are relevant, practical and viable has not been established.

2.3.3 Activity and Occupation

In contrast to the above studies focusing on biological aspect of the role of the IVD in LBP, other studies have explored the more social factors in the connection between LBP and activity. Posture and loading of the spine in different positions and activities is of specific interest in regard to LBP. It is interesting to note that many studies could be found looking at spinal loading and posture at work and certain high profile leisure activities such as those of elite athletes. However, there is a paucity of studies exploring the effects of physical load and posture in the home environment and during leisure activities of the general population.

A large study was carried out in Japan exploring the *work postures* of 33,530 construction workers from 141 companies who were sent questionnaires (Kaneda, Yasumasa et al. 2001). Of these 33,530 workers, 29.3% reported back pain "constantly" or "often". Of those who reported "constant" or "often" back pain, 80% reported that their pain began during work, 53.2% reported a gradual onset of pain during work and 30.7% a sudden onset during work. Interestingly certain occupations had incidences of LBP of 35% and higher, including those in the coal mining, reinforcing bar placing; plastering; interior finishing, roofing, bricklaying/tiling and welding categories. Painting had an incidence of 25% or less. This study also considered the number of hours worked each day, the number of holidays per month, the amount of time spent sleeping and whether the subject lived alone or with a family.

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The above Japanese study reinforces the theory that certain postures associated with certain jobs, could contribute to LBP. This finding is supported by a study reporting that postures such as bending and twisting the trunk, keeping the same posture, regular short movements, awkward postures, lifting, carrying, pushing and pulling are linked with LBP (Pivavet and Schouten 2000). In a pilot study carried out on 218 South African Nurses via a self-administered questionnaire, 80 nurses *perceived* lifting to be the cause of their LBP (Govender 2004). It would therefore seem important to consider specific work environments when looking at LBP and its management but also keep in mind that in reporting LBP perception of the cause may not be the real cause.

One study that did consider all aspects of activity – home, work and leisure was The MORGEN study (Pivavet and Schouten 2000). This large study was carried out in the Netherlands and looked at physical load in 22 415 people regardless of the presence of back pain. Fifty percent of the respondents had experienced LBP in the previous 12 months and interestingly 13% of this LBP, was attributed by respondents to specific activities involving physical loading of the spine. Data was collected by questionnaire over a 4-year period from subjects in three towns between the ages of 20 and 59 with nine specific questions on physical loading. Parameters of LBP included any incidence of LBP in the previous 12 months, CLBP in the previous 12 months lasting longer than three months and LBP radiating to the legs in the previous 12 months.

In all three of the above studies the subject's *perception* of the cause of their LBP was measured and not the *actual* cause. However, these *perceptions* are not necessarily incorrect in the light of the information available on the possible role of physical damage of the IVD under different loading conditions and postures. It is possible that in the studies performed *in* the workplace (Japan and South Africa) subjects might have been more inclined to link their back pain to work or to report back pain at work, but the MORGEN study was not carried out at work and still a relatively high percentage of the general population linked physical activity to their LBP. In the MORGEN study specific occupations were not listed but possible risk factors for LBP were identified, including: "lifting, twisting; pulling, pushing, bending," (Pivavet and Schouten 2000). While the formatting of the question in the MORGEN study could have biased the results by "leading" respondents to think of physical risk factors, it is likely that physical load could be an important factor in LBP. This theme links to other "external" associations with LBP such as obesity, and pregnancy.

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A study conducted in China explored the incidence of LBP in different work environments (Jin, Sorock and Courtney 2004). The prevalence of LBP in 383 people who were employed as teachers, garment workers and battery/kiln workers was studied. Back pain was categorised according to three different time frames of: "ever", "in the previous 12 months" and "in the seven previous days" and was assessed by self-report in the form of a questionnaire and physical examination. Differences in workload were evaluated by observation. Subjects were questioned about the time spent in physical handling activities such as pushing, pulling, carrying, lifting or lowering. The workers employed in the garment industry had more physical signs and reported a higher incidence of LBP than the teachers or the kiln workers. It is interesting to note that in this study, the kiln workers were assessed to perform more physical handling activities and it was suggested that it was the *fixed sedentary* posture of the garment workers, which was associated with LBP.

Thus the activities and occupations of those suffering from LBP appear to be important contributors to the incidence of LBP. However, the activities and occupations of those suffering from LBP in South Africa have not been explored.

2.3.4 Obesity

Obesity has been linked to a higher incidence of LBP (Govender 2004). It is theorised that an increase in body weight increases loading of the IVD and facet joints.

Should obesity be present in a significant proportion of the South African population it may be a contributing factor to LBP in this population. The link between obesity and LBP should be clarified for the person suffering with LBP and possible causes and management approaches for obesity suggested.

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2.3.5 Smoking

It has been suggested that *Smoking* is associated with a higher incidence of back pain and/or disc degeneration (Foppa and Noack 1996; Kaneda, Yasumasa et al. 2001; Keneda, Shirai et al. 2001; Kaila-Kangas 2003; Battie, Videman et al. 2004). Different reasons for this have been indicated. One study in particular revealed that smoking might compromise the microcirculation to the IVD (Urban, Smith et al. 2004), which would reduce nutrition available to the disc. Although the results cannot be generalised to humans, a second paper recorded that nicotine is implicated as a factor involved in cell destruction of the nucleus pulposis in rabbits (Akmal 2004). Smoking may stimulate receptors to the capillary network in the spine causing them to contract resulting in a reduced blood flow to the disc thus reducing nutrient supply and increasing the risk for degeneration (Roughley 2004; Urban, Smith et al. 2004).

While the causative link between smoking and LBP has not been fully established the strong association between smoking and LBP is notable. This relationship between smoking and LBP has not been established in a South African population and if present would need to be addressed by health care practitioners involved in the care of people with LBP.

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2.3.6 Age

There is conflicting data regarding the influence of age on the incidence of LBP. While some researchers suggest that an increase in age is associated with an increase in LBP (Hartvigsen, Christensen et al. 2004), others report on a relatively high prevalence rate of LBP in young people (Battie, Videman et al. 2004; Geldorf 2006). Some literature suggests that reporting of LBP declines in old age due to older people accepting some degree of pain as natural, being less active and having less work related stress with retirement (Cecchi 2006). It is also possible however that if LBP is reported less in older retired people it may be because of the absence of the different stresses attributed to work (Geldorf 2006). It is also possible that LBP in old age may be associated more with functional issues due to the presence of other physical problems (Takahashi 2006). Findings in children aged between 11 and 16 and ages 3 to 10 with LBP, revealed tears in the annulus of the IVD and degeneration in the disc endplate cartilage (Videman, Tapio and Nurminen 2004). It is possible that the school environment may be responsible for contributing to LBP. Poor postures, lack of appropriate furniture and the use of backpacks are some of the environmental stressors experienced by school children which may contribute to LBP in this population group (Geldorf E. 2006).

The mechanism by which age contributes to LBP is unclear. One suggestion is linked to the water content of the IVD that apparently decreases with age making it less able to withstand compressive forces of work and leisure (Setton 2004). However, this is a very one-dimensional approach to the factors, which may contribute to LBP, and psychosocial factors such as employment, leisure activities and stress cannot be ignored.

The prevalence of LBP in different age groups has not been established in the South African population. Once this has been established further exploration may reveal some of the factors that contribute to some age groups suffering a higher incidence or prevalence of LBP than others.

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2.3.7 Gender and Pregnancy

Gender and pregnancy have also been explored as contributing factors in LBP. Back pain in developed countries has been linked to hormonal and reproductive factors. For example previous pregnancy, being under 20 years of age for the birth of the first child, number of live births, use of oral contraceptives, use of oestrogen during menopause, and hysterectomy have all been found to be related to LBP (Winjhoven, 2006). It is possible that increased levels of oestrogen during pregnancy may increase the laxity of joints and ligaments' resulting in more chronic LBP but this possibility needs further exploration (Winjhoven, 2006).

It has often been noted that women experience/report back pain more often than men (Cecchi, 2006). However, a study in Sweden looking at the sick leave database of a population of 117 000 inhabitants of small community in the southeast, found that this difference disappeared when pregnancy was taken into account. They found that pregnant women have a higher incidence of sick leave due to low back pain than other women (Sydsjo, Alexanderson et al. 2003). This suggests that pregnancy may have a strong effect on figures for LBP among women.

In the South African context it is unknown whether females suffer or report LBP more frequently than males. It is also not known how many pregnant women in South Africa report LBP.

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2.3.8 Other Diseases

Back pain often occurs in association with *other diseases* (Foppa and Noack 1996). Musculoskeletal, lung and cardiovascular disease, gastric ulcer, headache/migraine and low physical functioning have been found to be associated with LBP (Cecchi, 2006). LBP has also been associated with poorer health as well as a decreased ability to move (Hartvigsen, Christensen et al. 2004). There are a number of possible reasons for these findings. (In the section on the psychosocial causes of LBP the role of health distress and stress in LBP and health perception (Cairns, Foster et al. 2003; Takeuchi, Nakao et al. 2004; Brage, Sandanger et al. 2007) and depression (Cairns, Foster et al. 2003; Haggman, Maher et al. 2004) will be discussed.) It is possible that people, who already have a disease and are stressed by it, perceive their health to be poor, become depressed by the disease and develop LBP as a result of these cognitive and emotional factors. It may also be possible that the health problems that caused these diseases were also predisposing factors for LBP. Again, it has not been established whether the South African population suffering from LBP have co morbidities.

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2.3.9 Trauma

Trauma has been linked to LBP. A person who has been previously involved in a traffic collision has an increased chance of having LBP. A study in Saskatchewan, Canada in 1994 looked at 4473 claims processed over a period of 18 months and found a high incidence of low back pain caused by motor vehicle accidents (Cassidy, Carroll et al. 2003). What was not investigated here was the way in which the trauma could possibly cause LBP. In light of the studies mentioned previously regarding the possible link between intervertebral disc changes and LBP, it is possible that damage to the IVD during and/or after a traffic accident may lead to LBP. It may be that the trauma of a traffic accident could result in psychological or social stresses and that LBP is an expression of this. Several studies report that people suffering from Post Traumatic Stress Disorder report higher incidences of pain and more severe pain than those with similar injuries (Geisser, Roth et al. 1996; Smith, Egert et al. 2002).

In the South African context physical trauma may well be a contributing factor to LBP. In a society like South Africa, where crime, violence and trauma is a daily occurrence for the majority of the population this cannot be ignored. In an essay published in Crime Quarterly, by the South African Institute of Social Studies in 1995, Anthony Altbekker notes that it is difficult to use crime statistics published from different countries for international comparison for many reasons. Police stations do not always have personnel to record all crime, governments are often reluctant to release true crime statistics and each country may differ in the way crime statistics are reported; but he still notes that " We can be sure that South Africa's murder rates are far higher than those of the industrialised world" (Altbekker 2005). Whether the trauma is a biological contributing factor or a psychosocial one due to the resultant stresses following a traumatic incident would need to be further explored.

While there appear to be many physical factors that contribute to LBP the exact mechanisms of action are unclear. As is mentioned in the discussion regarding the relationship between trauma and LBP it may be that physical and psychosocial factors interact to contribute to LBP and the exploration of physical or biological factors in isolation may be a limited.

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2.3.10 Psycho-social

The term psychosocial refers to one's psychological development in and interaction with a social environment (the culture that he or she was educated and/or lives in, and the people and institutions with whom the person interacts) (Wikipedia 2007). The effect of the environment on the individual and a person's mental processes and behaviours must be considered when exploring contributing factors to LBP. Further to this the effectiveness of addressing these issues in the treatment of LBP must be explored. Finally the role of these factors in a South African population with LBP needs to be investigated.

Some of the studies looking at the role of psychosocial factors in contributing to LBP were conducting on large sample groups. However, as with the studies investigating physical causes, the definition of LBP is not the same in every study and often many different psychosocial variables are considered at the same time. This is illustrated by comparing the following studies carried out in Japan, Switzerland and Sweden, each of which used self-administered questionnaires as a method of collecting data. Different scales were used in each study to measure the variables making comparisons difficult.

In 2004 a study from Japan, the association between Stress Perception and LBP was investigated. A large sample of 780 000 people was used with participants being from 47 different areas across Japan. Data was gathered in 1995 and 2001 as part of a routine 3-yearly Health and Welfare Survey. Answers to questions about stress, musculo-skeletal symptoms of low back, shoulder and joint pains were analysed. Results indicated a significant link between LBP and stress perception. Subjects who lived in urban areas were more likely to report stress than those in rural areas. However no suggestions were made as to why LBP may be linked to stress (Takeyachi, Konno et al. 2003). There is no specific mention of how LBP was classified. Unfortunately stress perception was not measured with any specifically recognised instrument but defined as "the perception or worry of any stressors in one's life". Stress is a recognisable symptom and may be the same in every type of society if the instruments used to collect data about stress are uniform. Unfortunately the results of this study may not be applicable to other communities.

Another study in Japan looked at the relationship between levels of LBP and resulting disability due to stress (Takahashi, 2006). The researchers were interested in possible discrepancies between pain and disability. This was a large study of "a random sample of all registered residents of Japan between 20 and 79 years if age". 2966 people in their own homes completed questionnaires. Questions targeting many variables: pain severity, LBP-specific disability, generic health-related QoL, perceived stress, working conditions, depression, stress at work, job satisfaction, relationships with co-workers and commuting time and method.

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Of the sample, 30.5% reported LBP for at least/less than 3 months. Results suggested that LBP and level of disability was "strongly associated" with age, depression, stress, overtime, job satisfaction, income, working conditions and relationships with co-workers. Leading the authors to suggest "disability attributed to back pain" may be a manifestation of "psychological disaffection" and "in some people interventions should not be confined to pain relief" (Takahashi N. 2006). This was a strong study methodologically with the use of recognised valid instruments to measure the possible variables contributing to LBP and back pain, as a unit being limited to that occurring in the previous month.

Another, rather more complex study has been published from Switzerland (Foppa and Noack 1996). This study was more complex in that it set out to consider many different possible aspects of LBP at once. As mentioned for previous studies on LBP, the classification of LBP used in this study makes comparison with other research difficult. Men (623) and women (227) from two work places, a supermarket chain and a municipal power distribution service, filled in self-administered questionnaires and participated in a structured interview. The self-administered questionnaire consisted of six categories of variables: socio-economic, work, private life, the individual (emotional problems, life satisfaction) behaviour (leisure time, smoking, alcohol and animal fat consumption) and health.

The results of the study found that the factors that showed a significant association with back pain (pain in the previous four weeks) were different in men and women. In women, time pressure, dissatisfaction with salary, a stressful life event in the previous year and low life satisfaction were associated with LBP. In men, low levels of education, smoking, leisure inactivity, regular use of tranquillisers, frequent visits to the doctor and obesity were associated with LBP. In both men and women a physically demanding job and a job with high demands were both significant. Unfortunately the low specificity of back pain, which was self-reported, weakens this study. The authors of this study report that the socio-economic variables found to be linked to LBP in this study had previously been found in two other studies. However, they fail to mention the target populations in the other studies, making it difficult to generalise the results to a specific population group.

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A Swedish review of several papers investigating the influence of specific psychosocial risk factors in the workplace found many to be of low quality and inconclusive (Hoogendorn, van Poppel et al. 2000). However, after analysis of studies that were considered to be of a high enough standard, the following factors were suggested to have an effect on LBP: *low workplace social support, job satisfaction, job content and job control. Mental overstrain, work control, social relations and work content* were also linked to LBP at work (Bildt Thorbjornsson, Alfredsson et al. 1998), as was *poor job satisfaction* (Bildt Thorbjornsson, Alfredsson et al. 1998; Hoogendorn, van Poppel et al. 2000; Cairns, Foster et al. 2003; Govender 2004). Among women, dissatisfaction with salary was suggested as a risk of LBP (Foppa and Noack 1996).

Psychosocial risk factors are apparently more likely to cause a person with LBP to take days off work than physical risk factors (Woolf and Pfleger 2003). This is of particular importance when considering treatment for LBP (Buchbinder and Hoving 2002). Unlike the authors of the other studies exploring psychosocial factors and LBP, the authors of this study attempted to describe possible connections between psychosocial problems at work and LBP suggesting changes in posture, movement, hormone excretion, and muscle tension that could occur as a result of psychosocial problems. They indicate literature that suggests psychosocial factors could also reduce the ability of an individual to cope with illness. One of the strengths of this study was that it searched a number of international databases and considered a wide range of papers in four different languages. The results are thus more able to be generalised and may have implications for a wide range of applications including South African work situations. It can be seen that these results agree with results of the Japanese study on stress. This further strengthens the results, as these factors appear to be notable in two different types of cultural societies.

Thus it can be proposed that psychosocial factors result in increased biological stresses, which may result in LBP. *Mood changes* associated with stress also cause changes in posture and movement that could predispose to injury (Hoogendorn, van Poppel et al. 2000). Changes in muscle tension due to stress may cause muscle spasm around the spine resulting in increased tension on facet joints and IVD's. An IVD already compromised by degeneration or previous injury, may be further irritated by this extra pressure resulting in pain (Hoogendorn, van Poppel et al. 2000).

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As has already been mentioned in the studies quoted above low levels of *education* and *socio-economic statuses* have both been associated with LBP (Foppa and Noack 1996; Takeuchi, Nakao et al. 2004). Although the exact role of these factors is unclear as demonstrated by one study finding no association between back pain and educational level (Takahashi N. 2006), this may be an occupation related factor; people with less education may have to rely on jobs that are more physical and thus be more susceptible to LBP.

Culture may affect perception and reporting of symptoms of LBP (Santos-Eggimann, Wietlisbach et al. 2000). A study looking at the variation of back pain in Britain and Germany found a difference in the occurrence of LBP between these two countries. This was a large study of 6235 subjects who answered questionnaires as part of a larger project on vertebral osteoporosis. However, the *risk factors* between the two countries for having back pain were not found to be different, and it was hypothesized that the differences found were possibly due to cultural differences in perceiving or reporting back pain (Raspe, Matthis et al. 2004). Unfortunately because this was primarily a study on osteoporosis and not LBP it lacked inclusion of measurement instruments that would have been more insightful into possible causes of these differences.

Different emotional states have been investigated with regard to LBP. *Depression* has been linked to LBP with many people with LBP also suffering from depression (Cecchi F. 2006). People who suffer from both LBP and depression are also more likely to use more medication and experience higher levels of disability (Haggman, Maher et al. 2004; Takahashi N. 2006). There has been some discussion to understand which comes first, depression or LBP. People with chronic LBP are more likely to have higher levels of psychological distress, which makes management more challenging, and they are less likely to have a successful recovery from their pain.

Catastrophizing (excessive focus on pain and its threat, and feeling helpless to control pain) has been found to be associated with back pain and disability at work (Faber E. 2006). Subjects with LBP who focussed excessively on pain had an increased chance of disability at work.

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Emotional distress over a 12 month period was found to be a strong predictor of persistent pain and disability in a recent study of LBP from Norway (Grotle M. 2006) which supports the use of yellow flags or psychosocial guidelines in the New Zealand Guide on the Management of LBP which are listed in a separate section titled: "Guide to Assessing Psychosocial Yellow Flags in Acute Low Back Pain "and uses a list of yellow flags – risk factors identified for 'long term disability and work loss (NZACC NZALBPG 2003). This guide was published by the Accident Compensation Corporation of New Zealand and uses "best-practice" guidelines from research into LBP together with the opinions of a panel of professionals gathered from many different disciplines. This guide contains an assessment procedure for these factors and management. It is not limited to a New Zealand population as it was based on a review of the "best available scientific evidence" from January 1999 to February 2002. It presents a useful framework for dealing with LBP but it must be remembered that the status regarding evidence for treatment of LBP is continually evolving and so no guide to LBP can be considered to be final.

Obviously some factors possibly associated with LBP in the psychosocial arena may be difficult or impossible to address in relation to the treatment of LBP especially in the short term, and they would not necessarily be aspects of care that could be addressed by for example, a primary health care practitioner or therapist. However, it may be useful for a practitioner dealing with LBP, to understand the circumstances possibly contributing to LBP within certain demographic frameworks. The many different variables regarding stress, depression, the relationships at work and LBP have been considered in some guidelines for treatment of LBP.

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2.4 Summary of Possible Causes of Low Back Pain

As can be seen there are many possible causes of LBP including biological, psychological and social factors. The relative importance of each individual factor and specific role each plays in the development of LBP is unclear. While these issues still need to be clarified their inclusion in the effective prevention and management of LBP cannot be denied.

From the literature discussed above there are important factors to note. On the biological side there seems to be evidence of the importance of the role of degeneration of and injury to the intervertebral disc with the occurrence of LBP (Roughley 2004; Videman, Tapio and Nurminen 2004; Kjaer, Leboeuf-Yde et al. 2005) and its response to loading during activity (Stokes and Iatridis 2004). The changes that occur in the IVD with age are also relevant (Urban, Smith et al. 2004; Peng, Hao et al. 2006) (Peng B. 2006). The strong associations between disc degeneration, LBP and both obesity and smoking (Kaila-Kangas 2003; Akmal 2004) mean that these factors must be explored in any population with LBP. Similarly, the importance of activity and occupation in relation to LBP has also been noted (Videman, T., Battie et al. 2006), as has genetic make up (Battie, Videman et al. 2004; Videman, T., Battie et al. 2006). With regard to psychosocial issues, LBP has been linked to social environment and the way people handle themselves in that environment (Foppa and Noack 1996; Bildt Thorbjornsson, Alfredsson et al. 1998; Hoogendorn, van Poppel et al. 2000; Takeyachi, Konno et al. 2003; Takeuchi, Nakao et al. 2004). Of special concern with regard to psychosocial issues is that these are the strongest indicators that a person with ALBP may develop CLBP (Thomas, Silman et al. 1999; Smith, Blair H., Elliot et al. 2004).

These issues need to be explored in a South African population group. Psychosocial issues including activities, occupations, job satisfaction, work relationships, stress, levels of education and socio-economic status need to be explored. Biological factors including age, obesity and smoking also warrant investigation. South Africa is a country that has a large and varied population accommodating different cultures as reflected by the 11 official languages. As seen when comparing studies conducted in different countries, it is possible that different cultural groups in South Africa may differ in their reporting; perception and management of LBP and research in this area must take cognisance of these issues.

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2.5 Treatment of Low Back Pain

With so many varying factors contributing to LBP it is not surprising that a combined bio-psychosocial approach to the treatment of LBP is recommended as most useful (Burton, A.K., Tillotson et al. 1995; Fritz, A. et al. 2003). A person with LBP is unlikely to do well if the approach to treatment is only physical or biological in nature (Cairns, Foster et al. 2003). The characteristics of the patient receiving treatment (including level of education, support system available, level of optimism about recovery, beliefs about LBP, perception of general health and previous episodes of LBP) may be important in predicting recovery (Jellema J. 2006) emphasising the contribution of the psychosocial issues discussed previously.

Although the magnitude of the population suffering from LBP in South Africa is unknown, current management and treatment approaches utilised can be explored. Although there are no national guidelines available for the management and treatment of LBP in South Africa, comparison of treatment approaches at a clinical level with international guidelines may provide some insight into the standard of care being delivered in the country. It must be noted that there are only 600 registered physiotherapists in the country with many government health institutions having no physiotherapy services at all or only one member of staff serving large populations.

In the developed world many different types of treatment for LBP are available. Its management is complex and apparently there is conflicting evidence to support any one particular type of treatment (Jellema J. 2006; Rivero-Arias O. 2006). Unfortunately there is also little evidence of the cost effectiveness of treatment (Rivero-Arias O. 2006). Although there are many different types of treatment currently being used for LBP, not all of them are necessarily available to everyone suffering from LBP.

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Some countries have compiled guidelines for the treatment of ALBP but it is important to note that these guidelines have been criticised. In 2004 a published review of 17 of these guidelines identified vast flaws (van Tulder, M. W., Tuut et al. 2004) in their methodology. A study published in 2002 reviewed the most recently published clinical guidelines from 11 different countries between 1994 and 2000 and found their content to be quite similar. However, they were found to have differences with regard to exercise therapy, spinal manipulation, muscle relaxants and patient information (Koes,van Tulder et al. 2001) This is a very active area of research worldwide and as a result many studies are published on the topic annually. During the time taken to complete this study a lot more research has been published than has been possible to review and as a result the most current literature may not have been included.

2.5.1 Pharmacological Treatment

Drugs are often the first choice of treatment for health physicians providing care for people with acute low back pain and the three medications most commonly prescribed are non-steroidal anti-inflammatories, muscle relaxants and analgesics (Carey and Mills Garret 2003). Current guidelines on the management of LBP include the use of analgesia in the form of Paracetamol and non-steroidal anti-inflammatory drugs (ACC 2003). A study reviewing 51 trials on the use of *non-steroidal anti-inflammatory drugs* (NSAID's) showed that, regardless of the type of NSAID used, they were only slightly more effective than painkillers in the short-term management of LBP. However, it was not conclusive that they were more effective than other drugs or non-drug therapies. In addition it must be noted there are many reported side effects of NSAID's including abdominal pain, diarrhoea, oedema, dry mouth, rash, dizziness, headache and tiredness and although these may not be severe they may be important to consider when looking at different treatment options for LBP (Van Tulder, M. et al 2000).

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A recent survey indicated that 2 million adults in the United States use *muscle relaxants,* 85% of which are used for musculo-skeletal conditions with back pain being the condition most associated with muscle relaxant use (Dillon, Paulose-Ram et al. 2004). This was a strong study as it was not compiled by a drug company but used data from the "Third National Health and Nutrition Examination" that was collected over six years in 50 different states. Nearly 34 000 people who participated in this survey were interviewed further to identify additional parameters related to use of muscle relaxants. Subjects were asked in a household interview what medication they had been prescribed, how long they had been using it for and why. They were asked to show the medication container to the interviewer, which reduced the bias of self-report. Back pain was the condition most associated with use of this medication (Dillon, Paulose-Ram et al. 2004).

Another study published in the USA in the same year – looked at data from "The North Carolina Back Project" using 1633 patients in the community seeking care for LBP. In this study, patients seeking care for LBP of not more than 10 weeks duration were selected for possible telephone interview. Information for this study was gained via a telephonic interview which may be subject to the bias of self-report. A version of the Roland Morris Questionnaire was used to assess functional status. This questionnaire has been noted to be a reliable instrument which may have helped to control the self-report bias. One methodological flaw was apparent; subjects were questioned about their use of type of medication, prescribed or un-prescribed, but no mention was made as to how rigidly the subjects had adhered to the prescription for frequency and dosage of medication which would obviously influence its impact. Results indicated no benefit of muscle relaxants (Bernstein, Carey et al. 2004).

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Opioid analgesics are also commonly used for the treatment of LBP but there is an apparent concern about the risk of side effects, physical dependence and development of drug tolerance (Luo, Pietrobon et al. 2004). The authors comment on the lack of information about use of opiates for LBP nationally in the USA as well as the lack of well-designed trials for the efficacy of opiates for LBP. Their study used data from almost 100 000 subjects collected in household surveys over a four year period. Information collected in interviews was combined with information from medical files and various techniques were used to try to reduce the bias of self-reporting which improved the quality of this trial. The duration of the pain was not considered however and there was no allowance for pain severity and functional limitation or how much and how often the opiates were actually taken for. Results indicate that opiate use was related to geographic location. This appears to reflect different trends of prescription by doctors in different areas. Trends of drug prescription do not imply that one particular drug is better than another or that it is better than another type of treatment for LBP. Apparently the type of doctor may determine the choice of drug and the authors also mention trends in drug use related to "aggressive marketing strategies" by pharmaceutical companies. Subjects on health insurance were also more likely to use opiates perhaps reflecting the market related aspects of drug use.

While there is no data relating to the pharmacological treatment of LBP in South Africa, the influence of marketing, availability and financial resources of patients on drug prescription and use could be applicable in this population group.

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2.5.2. Physiotherapy and Exercise

Physiotherapists can use different modalities of treatment for LBP. Modalities of physiotherapy that are suggested in current guidelines for treatment of LBP include spinal mobilisation, exercise, education and the provision of information.

At present many modalities of physiotherapy are being investigated in clinical research trials, as there is insufficient evidence to substantiate their use. Two problems became apparent when reviewing research into physiotherapy treatment for LBP: firstly, the type of treatment used to represent Physiotherapy was often not specified and secondly, if the treatment was specified, little attempt was made to account for the variables of that treatment. As with other studies investigating treatment for LBP, these studies also varied in the way LBP was classified in when considering the type and duration of the pain.

One category of physiotherapy that may be used to treat LBP is *Musculo-skeletal physiotherapy* which refers to the use of a *group* of techniques including mobilisation and manipulation of the spinal vertebral joints (*Spinal Manual Therapy – SMT)* as well as techniques to treat muscles such as myofascial release, trigger point therapy, dry needling and massage. Apparently these techniques combined with exercise therapy, are the most common form of conservative treatment for chronic low back pain (Goldby L.J. 2006). SMT has been shown to relieve pain for short periods of time allowing an increase in function (Sterling, Jull et al. 2001).

An illustration of the way the grouping of non-standardised physiotherapy techniques may lead to erroneous conclusions about their use can be seen in a study of a review of nine moderate quality trials (from an original 119) on the effects of SMT on CLBP. The selected studies found that SMT was not effective (Ferreira, Ferreira et al. 2002) when compared to NSAID's and some other types of treatment. In this review *four* different types of SMT were included as one type of treatment – there was no standardization for this modality and in addition no mention was made of how each application of the SMT was controlled. This cannot really be used as evidence that SMT is not effective.

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In a study that set out to investigate "Musculoskeletal Physiotherapy" 213 subjects were divided randomly into groups receiving either ten 1hr sessions of spinal stabilization (an exercise class to retrain muscle groups that stabilise the lumbar spine) or "manual therapy" which in this case consisted of "*any* form of manual procedure within the remit of musculoskeletal physiotherapy". Manual therapy could refer to massage, spinal mobilisation or spinal manipulation and it must not be forgotten that there are different types of massage, different grades of spinal mobilisation and different levels in the spine at which spinal manipulation may be used. Spinal stabilization in this instance was found to be more effective than musculoskeletal therapy (Goldby, Moore et al. 2006) but this does not mean that musculoskeletal therapy was not effective; it may simply be that the wide range of variables weakened the power of the analysis. Perhaps it would have been more effective if the specific techniques had been defined and used more precisely.

Another study published in the British Medical Journal in 2004 (Frost, Lamb et al. 2004) combined the use of many physiotherapy techniques at once was widely reported in the media (including the BBC) under the report heading "Physiotherapy no more useful than advice". In this instance, physiotherapy consisted of "any combination" of joint mobilization, manipulation, soft tissue techniques, spinal mobility, strengthening, heat, cold and advice. Subjects also received specific advice and a book about LBP, which was discussed with them, as did the control group who received no "physiotherapy" treatment. No physical outcome measures were used to test the results of physical treatments.

A study more specific in its measurement of physiotherapy modalities compared ultrasound with spinal "manipulation" (a grade V "mobilization"). This study used a wide range of outcome measures - Oswestry Disability Index as well as a pain VAS, lumbar range of motion, surface electromyography and muscle endurance. The ultrasound dosage was regulated in terms of time and intensity and the manipulation was specifically described although there was scope for some variability in application of each of these techniques. Subjects receiving both types of treatment also received exercises to do but the inclusion of these was less rigorously applied as physiotherapists were able to choose appropriate exercises from a computer programme (Mohseni-Bandpei, Critchley et al. 2006). Manipulation and exercise gave better results than exercise.

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Australian physiotherapists (Sterling, Jull et al. 2001) conducted a well-controlled study that demonstrated the benefits of a specific physiotherapy technique. They looked at mobilisation of the cervical spine as a modality of treatment, for neck pain. (The principles addressed here can be applied equally to the lumber spine and LBP). This study was designed to look very closely at the mechanisms in the CNS possibly linked to pain reduction that may follow spinal mobilisation. Although the subject number of 30 was not high, the variables were specific and well controlled: the mobilisation technique was limited in terms of amplitude and site (level C5/6 on the symptomatic side) and was performed for three 1-minute applications with a 1-minute interval between each application. This rigorous application of a well-detailed treatment technique has not often been used. Responses for pain, temperature and the sympathetic nervous system were monitored. The threshold for pain perception increased 23% following mobilisation suggesting that the benefits of SMT could be derived by direct stimulation of mechanical nociceptors acting to intercept and reduce the painful stimulation being perceived by the brain, as well as stimulation of the sympathetic nervous system (Sterling, Jull et al. 2001).

On the whole results of trials of SMT have been considered convincing enough for it to be included in some guidelines on the treatment and management of LBP.

Traction is another application of physiotherapy that has a number of different variables and for its efficacy to be properly assessed closer attention needs to be paid to these. A paper that reviewed12 different trials exploring the effect of traction for the lumbar spine, found the trials to be poorly designed (Krause, Refshauge et al. 2000) - definitions of LBP were not consistent and the studies did not account for the various types of traction used such as continuous, intermittent and manual or motorised. Similarly, the differences in the force, duration and frequency of treatment were not properly investigated limiting the applicability of the studies. This paper reviewed literature about the possible ways traction could reduce LBP and found the biomechanical theory that traction separated intervertebral segments as a precursor to pain reduction was supported, although this was not linked to any effects on clinical signs and symptoms of LBP.

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Heat is apparently useful in the treatment of pain as it slows down the impulses of pain received by the brain. Physiotherapists often use heat in their treatment of LBP to relieve muscle spasm that may be associated with LBP as well as to treat the pain. A review of evidence in a study listed in the Cochran Library suggests there is moderate evidence for the reduction of low back pain with heat (French 2008). However this treatment does not address causative factors and its efficacy appears to be short term.

A Physiotherapist may use *exercise* as a modality of treatment for LBP and the use of exercise is mentioned in some guidelines of LBP (NZACC NZGALBP 2003) but the prescription of exercise as a modality of treatment for those with LBP is not always consistently described. (Koes, van Tulder et al. 2001). This may be because there are many challenges in researching exercise and LBP. These challenges occur firstly because it is difficult to blind subjects regarding the type of treatment they are receiving during a study; it is also difficult to blind the person giving the exercise. Secondly, there are many ways in which exercise can be used as a modality – for example, exercises can be: given to the patient on a pamphlet of information about LBP, demonstrated during a consultation, or learnt/performed during a supervised class. Exercises can be used to stretch, strengthen muscles that support the spine (Liddle, Baxter et al. 2004) or mobilise spinal joints to reduce inflammation and pain. They are also used to increase levels of activity to enable a return to activity (Klaber Moffett, Torgerson et al. 1999; Klaber Moffett, Carr et al. 2004). Thirdly, there are many different types of exercise to consider.

The field of exercise as a treatment for LBP is vast and may need to be clarified further to enable more specific analysis of how exercise can be successfully applied. For example if an exercise was to be used to target muscle strength in an effort to reduce LBP the particular muscle in use would need to be identified, the position used to strengthen it and the number of repetitions used at each session would need to be stated. When reviewing literature on exercise prescription it became evident that rigorous definition of exercise was not always followed.

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In 2003 a review of current evidence on exercise and LBP was published (Liddle S., Baxter G., and Gracey J. 2003). Sixteen out of 54 trials were considered for inclusion in the review of which 12 showed a positive result for exercise and LBP. Strengthening exercises were a common component of all interventions. A study was marked as high quality if it adhered to the definition set out by the American College of Sports Medicine Exercise Guidelines when using an exercise for muscle strengthening. They suggest that an exercise for muscle strength should be done "2-3 days a week, at least one set of 8-12 repetitions". As a result 9 trials were considered to be of a high quality when considering this definition, however, a wide variety of exercises were used within single trials as well as between the different trials, which made it difficult to categorise the exercises.

Further illustrations of this problem of exercise specification can be seen in a study by Klaber Moffett who looked at a trial of "exercise" for LBP (Klaber Moffett J et al 1999) for back pain. Back pain was categorised as "mechanical LBP of 4 weeks to 6 months duration" and the programme consisted of "8 sessions of exercise, each lasting an hour, spread over 4 weeks with up to 10 participants in each class". The programme included "stretching exercises, low impact aerobic exercises, and strengthening exercises aimed at all main muscle groups". In this RCT no specific criteria was set for muscles stretched or strengthened or how the strengthening was done.

There is ongoing investigation into the role of specific spinal muscular control *(spinal stabilization)* in treating back pain. In this treatment, specific muscle activity is targeted where there are suspected areas of weakness. Recurrence of LBP was substantially reduced when the multifidus muscle was specifically targeted (Buchbinder and Hoving 2002). However, this treatment requires ultrasonic confirmation of muscle activity, which is not always available in the clinical setting and may make its application difficult. A more recently published study, found a spinal stabilization programme (a 10 week course of exercises focussed on retraining specific stabilizing muscles of the spine) more effective than treatment consisting of up to 10 sessions of manual therapy (Hides, Jull et al. 2001).

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Another trial exploring the effectiveness of exercise on LBP found that prescribing specific exercises related to individual muscular weakness was more effective than a general exercise class (Descarreaux, Normand et al. 2003). The authors of this study feel that as the risk factors for LBP are numerous it would "be surprising that everyone could benefit from the same exercise program". Exercises were given after an evaluation of each patient according to what was found in the evaluation.

The group dynamics and the effects of supervision on compliance with exercise should be considered. Good results from small groups or a personal session may occur from a potential increased perception of caring and treatment satisfaction (Liddle, Baxter et al. 2004). Exercise also promotes of wellness behaviour (Liddle, Baxter et al. 2004), which may be another useful aspect to consider when looking at the psychosocial effects of LBP. The effects of exercise are obviously not only biological or biomechanical.

As with any treatment it would be important to consider the cost-effectiveness of exercise. In one study exercise classes providing general stretching, strengthening, relaxation and education have been found to be more cost effective than general practitioner management of LBP (Klaber Moffett, Torgerson et al. 1999) The exercises here were not categorised according to type and the way in which they were performed.

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2.5.3 Treatment of Psychosocial aspects of LBP

Research suggests that psychosocial factors may contribute to the development of and possibly prevent recovery from LBP (Linton 2000). As has been mentioned previously, recent guidelines for the treatment of LBP in the United Kingdom and New Zealand have been updated and now include a list of "yellow flags" or psychosocial risk factors, which are known to increase the chances of ALBP becoming chronic. These guidelines suggest that early identification and management of these factors may improve recovery (New Zealand Guidelines Group 2003).

Beliefs about LBP are apparently important predictors of delayed recovery (Gross D.P. 2006). A recent study in Canada showed that public beliefs about LBP (that it makes everything in life worse, will stop one working and become progressively worse with age) are not in line with current scientific evidence about LBP (that it is a benign, self-limiting condition for which sufferers need to stay active) (Gross D.P. 2006). Workers with lower recovery expectations were found to be more likely to be receiving work disability compensation six months after an episode of ALBP. Recovery expectation is one of the most consistent predictors of work disability from LBP (Faber E. 2006). In order to combat the possible negative impact of recovery expectations, depression and emotional distress, current guidelines for the treatment of LBP include explanation and re-assurance (ACC 2003). This may also help address problems related to perception of risk, control, depression, catastrophizing and fear of movement.

Perception of Risk – it has been suggested that a person suffering from LBP is more likely to change his/her behaviour regarding back care if motivated to do so. A study investigating this indicated that motivation to change behaviour with regard to LBP was more likely to occur if the person with LBP perceived him/herself more likely to continue to have LBP if he/she did not change his/her behaviour (Jamison 2004).

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Locus of control: this is a term which is used to define the degree to which a person believes he/she has control of events rather than apportioning the blame to chance or external causes has been recognised as an important factor in management of LBP (Sowden M. 2006). This is an important aspect of healthcare on which numerous studies have been done. Control could also relate to empowerment. Empowerment in general "refers to increasing the spiritual, political, social or economic strength of individuals and communities. It often involves the empowered developing confidence in their own capacities". (Wikipedia 2007). This is an interesting concept to pursue in terms of healthcare, especially in connection with LBP. A patient might for example feel more empowered if they understood their nature of their illness and had some means by which they could deal with it themselves to minimise any negative impact it was having on their lives. There has been some move to consider the empowerment of patients regarding their health. Wikipedia also suggests that with empowerment it is possible for people to have decision-making power of their own, have access to information and resources for taking proper decisions, have a range of options from which they make choices, have positive thinking on the ability to make change, have the ability to learn skills for improving one's personal power, increasing one's positive self-image. In Physiotherapy for example, treatment can be 'patient centered' or 'therapist centered'.

Fear of movement or fear avoidance behaviour is an aspect of LBP that has been investigated. People with LBP may fear moving, firstly because they think that movement may be painful and secondly because they are concerned that the back is damaged in some way and that movement will cause more damage. Fear avoidance is apparently a powerful predictor of future disability from LBP (Swinkels-Meewisse I.E.J. 2006) and its presence can significantly predict functional status (Takeyachi, Konno et al. 2003). Re-assurance and advice alone may not be enough to reduce this fear and it has been proposed that specific educational sessions to enable fear reduction may be necessary to deal with this problem (Swinkels-Meewisse I.E.J. 2006). The way an individual assesses pain and responds to it have been found to be important factors with regard to the development of disability in relation to the pain (Sowden M. 2006)

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Workers with a greater work fear-avoidance (fear that work activities will re-activate pain) were found to be more likely to still be receiving work disability compensation six months after an episode of ALBP (Faber E. 2006). A study by Dutch Physiotherapists found that when a person has LBP, the intensity of the pain, together with the amount of activity that the person avoids participating in (such as sport and other leisure activities, social and family activities) as well as a perception that movement will cause more damage to the back, all significantly predict disability from LBP (Swinkels-Meewisse I.E.J. 2006).

Functional restoration programs (FRP's) were developed in the 1980's in an attempt to rehabilitate patients with LBP, as conventional treatment was not seen to be effective (Jousset, Fanello et al. 2004). FRP's aim to improve function as well as physical, social and psychological aspects of patient-care (Jousset, Fanello et al. 2004). In these programs the complaint of pain is essentially disregarded, and management instead focuses on improving the patient's capacity for movement and for tasks specific to their occupation. A hallmark of the program is the use of back-testing machines to objectively monitor changes in range of movement and muscle strength, with regular provision of feedback of gains to the patient (AFOM 2007).

It can be seen that many possible physical and psychosocial treatments of LBP have been identified with differing levels of evidence to support their use. However, it has not been established whether these approaches are used in a South African population or whether they would be viable in a developing country with limited health care resources. The effectiveness of economical, evidence based physiotherapeutic interventions on LBP need to be explored.

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2.5.4 Education, Information and Advice

Education, information and advice are some of the methods investigated as an approach to reducing LBP. As with other studies into treatment of LBP, there are differences in the types of education, information and advice used in each study making comparisons of effectiveness difficult. It is possible that different communities have different needs and requirements regarding the provision of information about LBP when considering different possible causes of LBP.

It would appear that people suffering from LBP do seek information about their LBP. It is reported that during an episode of LBP patients go to see a doctor primarily for information and reassurance (Burton, Kim A, Waddell et al. 1999; Roberts, Little et al. 2002), however studies show that patients report being unhappy with explanations they receive about the cause of their back pain (Burton, Kim A, Waddell et al. 1999). (It must be noted that these studies were not done on LBP sufferers in resource poor communities in Africa). As was indicated in the first section of the literature review, there are many possible causes of LBP, which contributes to the difficulties of providing an accurate diagnosis making reassurance about cause of injury challenging (Cherkin D. 1996). Most recent guidelines on the management of LBP recommend "printed educational material" and advice (Burton, Kim A, Waddell et al. 1999). Indications are that providing patients with information about their LBP is important and it can be noted that provision of information to patients is "considered to be a fundamental ethical, legal and professional obligation" (Hill and Bird 2003). What may be important to consider for the management of LBP in a resource poor country. It has been suggested that this aspect of patient care for LBP be considered "before more expensive alternatives" and this may be especially important to consider in a resource poor community.

The method by which information is provided may affect its effectiveness and the content of information provided to patients suffering from LBP is subject to debate and investigation. Some schools of thought advocate the omission of specific anatomical details of possible causes of LBP in educational material suggesting the focus of the information should be on methods of recovery and safe lifting working positions.

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Verbal advice has also been considered as a form of treatment in contrast to specifically defined educational programmes. Some of the variables associated with this form of "treatment" include the type of person imparting the "advice". There are questions of who should provide advice: a doctor, a nurse, or a physiotherapist; and whether one profession is better to suited than another in providing information and education. Similarly, patients' perceptions of the roles of different health care providers, in terms of what advice, information or education they can or are better qualified to provide, and whether these perceptions affect the way they behave or feel with regard to LBP, are also unclear. Not all these aspects have been investigated, although it has been noted in Britain that the boundaries of different health care professionals is moving and that there is a shift towards skill mixing. In a comparison of subjects who had had LBP for more than six weeks; one group had physiotherapy treatment while the other received only "advice" found that both groups showed the same improvement but the advice group was a more cost-effective approach (Daker-White, Carrr et al. 1999).

Educational leaflets as a form of intervention have been shown to help reduce anxiety and increase satisfaction with treatment (Roberts, Little et al. 2002). As with previous studies into LBP there is a lot of variation in the type of studies carried out in this field. Despite the variations in methodology and form of education, patient satisfaction, decreased pain and increased function all appear to respond positively to written information (Little, Roberts et al. 2001; Roberts, Little et al. 2002).

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In 1999 a study was published by Burton (Burton, Kim A, Waddell et al. 1999) looked at a written form of information for people suffering with LBP. This study raised the issue of what type of information to provide in written form. It was felt that providing traditional information focussing on a specific injury was not useful. In this instance a "Novel Educational Booklet" was used to try to change belief and behaviour rather than just give factual information about LBP. This was done after researchers reviewed what they felt was "increasing evidence" that LBP is better dealt with "according to a bio-psychosocial model". Subjects received normal treatment, which may have included drug therapy and manipulation, as well as one of two booklets – a control booklet that provided information in line with the biomedical approach and the new booklet, which had been developed by the Royal College of General Practitioners for use in 1996. It included statements such as "The spine is strong. There is no suggestion of any permanent damage" and "back pain is a symptom that your back is simply not moving and working quite as it should. It is unfit or out of condition" "the sooner you get active, the sooner your back will feel better again". In this study, just over 100 subjects were used from six primary care practices in England. Subjects were followed up at two weeks, three months and one year after baseline. Beliefs about LBP were found to have changed significantly and those who received the "Novel" booklet showing greater improvement.

A very real concern is whether education about LBP will result in a change in behaviour. A study conducted by a chiropractor in Australia on lifestyle changes in patient behaviour after educational leaflets were left in a waiting room found that less than 25% of subjects had implemented any change within three weeks of receiving the information. Those that did implement any change only implemented those changes that were least disruptive to their lifestyle (Jamison 2004). Thus it would appear that information alone might have a limited role.

In a study by Hazard (Hazard, Reid et al. 2000), an educational pamphlet was used by to encourage self-care and a quick return to work. The pamphlet focussed on behaviour and attitude change rather than physical damage. It was mailed to subjects who had injured themselves at work and reported LBP. This was followed up telephonically three and six months later. While some studies have shown this to be an effective approach (Burton, Kim A, Waddell et al. 1999), Hazard et al found no reduction in pain, health care visits, or reduction in subsequent work loss.

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Another study approached behaviour and attitude change with a one on one, face-to-face education session. This approach was used to inform patients that movement would not cause more damage to the back but could help with recovery and healing. This method showed a reduction in functional disability from pain and a promotion of recovery. It is possible that the mailed educational pamphlets do not receive the same amount of focus and concentration of a face-to-face consultation. There are other aspects of this to consider - perhaps a face-to-face consultation is perceived as being more personal with the complainant feeling more 'cared for' and this may aid in recovery. Perhaps psycho-social aspects of causes of LBP; stress from difficult relationships, problems at work and with finances can be helped in part by a feeling of being cared for which may be provided in a face-to face consultation.

A study published in 2001 was performed because the authors felt that the effectiveness of information leaflets needed to be assessed more rigorously (Little, Roberts et al. 2001). It looked at the content of information leaflets in a different way by comparing a physician's advice to exercise with an endorsement of a self-management booklet. The results suggest that both of these approaches reduced pain and improved function in the first two weeks. In addition, the subjects receiving the booklets also had increased knowledge. Satisfaction with the medical intervention was better in both interventions. While these results are interesting, the study is weakened by the fact that there was no control group and the subjects were restricted to those with acute LBP or an acute episode of LBP.

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Of particular interest is a study titled "The *BACK HOME* Trial", published in 2002, which used a leaflet developed after a 'needs analysis' was conducted on patients who had recently had LBP (Little, Roberts et al. 2001). This study looked at parameters of knowledge, perceived control, anxiety, satisfaction and behaviour. The leaflet was devised over 5 stages. In the first stage, patients with their first acute episode of LBP were asked to identify topics about which they most wanted advice from their physician, 27 topics were identified. A second group of subjects, also experiencing their first episode of ALBP, were asked to rate the topics in order of preference. These topics were then given to a third group of patients who were attending a back school and who had had back pain for longer, were also asked to rate them in order of preference. Opinions about leaflet content were obtained from experienced physiotherapists and other medical practitioners including a rheumatologist. Lastly patients at the back school were used again to evaluate the leaflet. The leaflet was then tested on subjects who were experiencing a new episode of LBP.

In this trial, sixty-four subjects were randomly divided into two groups, one received the GP's usual treatment and the other received the usual treatment plus the new leaflet. Patients were followed up two days; two weeks, three months, six months and one year after the leaflet had been given to them. Subjects who were given the newly developed leaflet were found to have better knowledge about LBP, perceived themselves to be more in control and less anxious about their condition and were more satisfied with their treatment. This information also appeared to change the way these patients behaved, as it was found that they took more care of their backs. While the results of this study may not be applicable to a South African population, the methodology employed to develop an appropriate leaflet could be adopted to develop and test the efficacy of such a leaflet.

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Of importance to consider with regard to educational materials such as leaflets, especially in the field of primary health care, is the issue of *health literacy*. It is important to consider whether the patients receiving the written educational material are able to read and understand it. The best way to present information to populations who may have decreased levels of literacy must be considered. Some studies that have investigated aspects of the provision of health information in Africa have for example, compared pictograms as an alternative to the written word to try to increase the success rate of information transfer while methods of communication for people unable to read have included puppet shows and plays. South Africa is said to have a literacy rate of close to 80% but there is apparently a difference between literacy - those who can read, and health literacy - those who are able to read and understand health information (Kickbusch 2006). It has been suggested that a Health Literacy Index would be a good way of indicating the outcome of "health promotion and prevention activities" (Kickbusch 2006) but at present there is no health literacy index.

Prior to giving out information it is obvious that the population it is intended for must be able to read and understand the language the leaflet is written in. In a country with many diverse populations as in South Africa where there are 11 different official languages this would be especially important to define. If the most useful type of information that could be given to people with LBP in a low-income group in a primary health care setting in South Africa in leaflet form the language of the leaflet should be appropriate to the community for which it is intended. At present there is no information regarding the use of leaflets for people with LBP in South Africa.

There seem to be many studies looking at the design of leaflets that accompany drugs but few that look at the design of leaflets for LBP. Optimal methods for the transfer and retention of information regarding LBP have not been adequately explored. However, it may be useful to consider guidelines developed for information leaflets designed to accompany drugs. A directive from the European Union in 1999 gives specific guidelines for the inclusion of "a comprehensive information leaflet" to accompany all medicines (Dickinson, Raynor et al. 1999). A leaflet designed according to "best practice" guidelines that includes the use of bullet points, ideal print size, broken paragraphs, short easy to read sections which has had all jargon removed with the information ordered and reworded appropriately performed much better than a prescriptive model (Dickinson, Raynor et al. 1999).

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Studies that have investigated different aspects of **Education** for LBP have shown conflicting results with regard to symptoms, function, disability and health care use in people with LBP (Cherkin, Deyo et al. 1996; Schenk, Ronald J., Doran et al. 1996; Schenk, R. J., Doran et al. 1996; Moseley 2003; Scholten-Peeters, Neeleman-van der Steen et al. 2006) In many studies, the educational models used are all different making comparison of results challenging. Some educational programs for people with LBP have been found to reduce the symptoms, reduce and the amount of time that is taken off work and increase patient satisfaction with treatment (Karjalainen, Malmivaara et al. 2003) while others have found the opposite (Cherkin D. 1996).

Lorimer Moseley used a specific educational intervention in one particular study where subjects received information either about the physiology of pain, or about the anatomy and physiology of the lumbar spine (Lorimer Moseley 2004). One hundred and fifty subjects participated in this study and the information was given in a one-to-one education session that lasted around three hours. The subjects were volunteers who had had back pain for longer that 4 months and were consulting a private clinic for treatment. Results indicated that as attitudes about pain improved so did the test for straight leg raise and forward bending. The measurement procedures were only completed before and after the education session so there is no confirmation that this result is lasting or that it affects function in a practical setting. It suggests that providing information about the mechanism of pain, or changing perceptions of the cause of pain as it relates to LBP may more useful than just providing information about strict anatomy and physiology about LBP. Unfortunately providing patients with three hours of one on one education could be expensive and may not be practical in all circumstances. It would however be interesting to investigate the cost-effectiveness of this approach.

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An intervention that teaches patients with LBP how to be responsible for the management of the pain is apparently useful for improving functional activities, however it appears to be an expensive form of intervention (Strong L.L. 2006). One study investigated a self-management intervention where subjects participated in group educational sessions covering specific topics including information about: common causes of back pain, when to resume normal activity, exercise, posture, body mechanics and handling flare-ups of LBP. The participants showed a significant improvement with this type of intervention. The cost of this intervention was considered and it was found to be more costly to deliver than the "usual" treatment of giving the patient a booklet on back care, (Strong L.L. 2006) which does not mean it was not more cost-effective.

Back Schools, which were introduced in the 1970's (Schenk, Ronald J., Doran et al. 1996) target improvement in knowledge about LBP and behaviour to reduce pain and disability and increase self-help. One study that used 205 healthy subjects compared a video presentation on back education provided in a group situation to a back education programme where subjects were able to practice lifting techniques and have feedback from the instructor. When tested on knowledge of lifting technique, spinal anatomy and biomechanics the group that were allowed to interact and practice had significantly higher scores. The content of the two programmes were identical but the method of education differed. Although this study has several flaws including that it was tested on a healthy population, only theoretical improvement in knowledge was tested and not a change in behaviour; it does however provide some insight into the benefits of group interaction, feedback and practice in education. Providing information is important, as is the actual practice of different activities related to back care.

Videos as a form of education on the whole have not had good results. One study investigated the difference in presenting a two-hour video of a back-school presentation and suggested that this method of education was less useful than face-to-face education combined with practice of good-lifting techniques. A further study found videos were not useful in reducing pain, disability or healthcare costs in regard to LBP (Henrotin Y.E. 2006). Perhaps the impersonal aspect of video education reduces impact.

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It seems that educational programs have their benefits but that they may be a more expensive form of intervention than the provision of written information. They may however, be more cost-effective.

2.6 Summary of Different Methodological approaches to Research for LBP

As has been seen in the literature review, different approaches have been used to explore different aspects of LBP. There are epidemiological studies that collect information about those suffering from LBP in different population groups, such as in different countries, different regions of countries and different occupational and leisure categories. These have been conducted using personal one-to-one home interviews; interviews and examination at work, telephone surveys and also by using information about back pain obtained from studies into other health problems. Information collected from these studies is subjected to statistical analysis to understand if LBP has any particular association with the population group that is being researched. Studies may look at prevalence – the amount of pain occurring in a population at a specific point in time and may try to make associations between LBP and other factors such as smoking, occupation or obesity. Cohort studies into LBP are longitudinal and look at LBP over a period of time in different population groups. The most useful way of testing *treatment* for LBP is in the form of a Randomised Control Trial. Again as has and will be illustrated, trials into treatment for LBP are varied in their methodology that makes comparison difficult.

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The 1998 and 2000 issues of the journal SPINE contained reviews and recommendations for the measurement of LBP and evaluation of its treatment (Deyo, Battie et al. 1998; Bombardier 2000). These articles confirm comments made in the literature review regarding the wide variety of methodologies that have been used in different investigations into LBP, which make comparison of data difficult. An international panel of back pain researchers compiled the information for these articles, which were concluded with a set of recommendations of outcome measures, some of which confirm the choices of instruments used in this study. These researchers suggested a core of measures: a test of function specific to LBP, generic health status, pain, work disability and patient satisfaction (Bombardier 2000) for use in research on LBP.

It has been noted that researchers should choose a measurement instrument appropriate to the disease being looked at and the population to which it is being applied (Chansirinukor, Maher et al. 2005). Recommendations for measurement instruments are that they should be practical, comprehensive, reliable, valid and responsive (Deyo, Battie et al. 1998; Chansirinukor, Maher et al. 2005).

The first measure recommended by the panel of researchers in the two issues of Spine mentioned was a functional test specific to LBP. Either The Roland Morris Disability Questionnaire (RDQ) or the Oswestry Disability Index were recommended, as they are quick and easy to administer and are valid and reliable. The Roland-Morris Disability Questionnaire (RDQ) is widely used and has been shown to be valid, reliable and responsive to change (Turner, Fulton-Kehoe et al. 2003). It is the most commonly used back specific measure (Bombardier 2000) and has been translated into a number of different languages (Padua R. 2002) to enable its use to assess the treatment of LBP in many countries (Suzukamo 2003). It has been suggested that the RDQ is most useful in primary care settings (Deyo, Battie et al. 1998). There are many questionnaires assessing the functional disability of patients with LBP (Chansirinukor, Maher et al. 2005) and a literature review from January 1996 to January 2002 revealed 36 such questionnaires (Grotle, Brox et al. 2005).

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The researchers advocated the use of a measurement of generic health status to provide a "comprehensive" picture of the patient, as this is not measured in back-specific instruments. Again two instruments were suggested: SF36 and the EuroQoL.

A measurement of pain - Visual Analogue Scale (VAS) was among suggestions made. The VAS for Pain has been widely used and has evidence of construct validity. Other larger, more detailed measurements of pain were considered but the strength of the VAS apparently lies in its speed and ease of administration.

The review did not suggest inclusion measurement of health distress. However as has been indicated, health distress may be an important aspect to consider in the management of LBP, as it is an important predictor of future functional disability and progression of ALBP to CLBP (Farmer and Ferraro 1997). Stress has clearly been linked to LBP and reduction of stress may have important implications in the possible prevention of future disability. There are few instruments available to test health distress. The Stanford Health Distress Questionnaire (SHDQ) is a valid and reliable measure, which can be used to assess the level of stress caused by LBP. The Stanford University Patient Education Research Centre has different instruments available for use and they indicate, "We only develop and use programs that have been tested for effectiveness with randomised, controlled trials "(Stanford Patient Education Research Center, 2005).

The review did not mention testing aspects of control and LBP, but as has been mentioned, control is an important part pain management and prevention of future disability. The Multidimensional Health Locus of Control Scale has been used in many studies Research supporting the validity of these scales has been published with specific regard to version C of this scale. Version C is disease specific and was used in this study (Wallston 2004).

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In South Africa there is little information about LBP. A review of the literature has illustrated that many countries have continually evolving databases regarding different aspects of LBP and as a result the incidence and prevalence of LBP are known factors. Country specific guidelines are also in place with management protocols for LBP. These countries also have information about the costs of management and treatment of LBP.

2.7 Summary of Literature Review

As was previously summarised LBP has many possible causes, associations, and predictive factors. These aspects of LBP cover a wide range of issues. LBP may be influenced by gender, race, culture and age and genetics. The possible influence of lifestyle factors have also been considered. There are those factors of lifestyle that may be considered to be within our power of choice such as such smoking, alcohol and type of leisure activity. There are other lifestyle factors, such as occupation, that are less of a choice, especially to those people who have had less education are also important regarding LBP. While LBP may be influenced by biological factors such as the intervertebral disc, the effects on LBP of psychosocial factors such as stress, distress, depression and problems at work as well as how these issues are all dealt with, have also been recognised.

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The economic burden of LBP is enormous in many countries, and despite a lack of information, it can be assumed that LBP is a problem in South Africa that is consuming health care resources.

There are many possible treatments of LBP with few substantiated. Current guidelines include re-assurance, early return to activity, analgesia and education. It has been seen that information leaflets are one way of providing cost-effective re-assurance, advice about activity and education. Leaflets providing information on LBP have been shown to be effective; especially if they are related to the self-described needs of the patients themselves. This form of treatment is cheaper than other forms of intervention.

It has been noted that patient information possibly has a better effect when the content is specifically related to the community it is intended to inform and when the content is related to the perceived needs of that community. Leaflets that have currently been researched for LBP education have targeted populations in First World countries. It is possible that both in terms of design and population need, it would be more effective to design a leaflet specifically for this population.

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2.8 Research Setting

The research setting was a clinic in a resource poor area of Cape Town, home to a socio-economically deprived population mostly of mixed ancestry. The level of education is low and the majority of residents are manual workers. The clinic is run by the Cape Town Municipality and is staffed by nursing sisters and a medical doctor. There are no rehabilitation staff attached to the clinic and patients who need care are sometimes referred to a physiotherapy service several kilometres away. The medical practitioner working in the clinic indicated that at least five people per day presented complaining of LBP.

The clinic doctor is already providing analgesia for patients with LBP and an information leaflet is already in use. The leaflet in use is not population specific and thus may not be optimal. As has been discussed formats of information presentation may optimise the impact of the information as would the use of images, which the target community can relate to e.g. using pictures of people similar to those that might be part of the community. The leaflet currently in use does not address any of these issues.

Information leaflets are considered to be a useful approach to dealing with LBP for reasons of economy, patient satisfaction, treatment compliance, belief and function. They also provide information, which may be considered a basic human right.

There is no information about people suffering from LBP in this community and the researcher compiled a questionnaire to provide this profile. Demographics collected included gender, age, occupation and socio-economic information. This information was vital as there was no available information on the type of people suffering from LBP in South Africa as a whole.

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Previous studies indicate the possibility that information sheets about LBP are more successful if they are tailor made according to the specific needs of the community they are intended for. These studies however, had been performed on populations that were perceived to be different from this population in terms of type of employment, income, education, and activity and as a result it was decided that in order for an information leaflet to be used, the specific needs of this community would need to be established. Categories on knowledge of LBP and what causes it and what caused the LBP of each complainant in particular, as well as individual knowledge about treatment of LBP and the use of medication were included in order to gauge what kind of information to include on the leaflet.

The leaflet was headed in large bold print with the name of an anti-inflammatory medication; however, patients were not usually given this particular drug as part of their treatment. This could have been a source of confusion, as could the wording after the drug label "relieves pain and stiffness; restores mobility". It was felt that this emphasis on the benefits of the anti-inflammatory might have detracted from other important messages in the leaflet.

This leaflet contained four different categories of information. The first item was a brief description of the importance of maintaining the curves of the spine. There were then six descriptions of important postures in different positions such as sitting and standing. Black and white illustrations of figures in the recommended postures accompanied these pictures. The pictures however depicted such activities as driving a car and using a computer – activities that were not considered to be part of the normal daily routine of members of this particular community.

The pamphlet contained an item about the importance of rib angle, which was not something that was commonly considered to be relevant while doing background reading on LBP. The back page consisted of descriptions of seven exercises accompanied by a diagram depicting these exercises. The issue of exercise inclusion in information leaflets on LBP has also been questioned and is considered controversial. There were no recommendations about how many exercises to do, when to do them, how often to do them or any warnings about doing them. The exercises also seemed to contradict themselves with some aimed at lumbar extension and others targeting lumbar flexion.

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The leaflet contained no re-assurance and advice as recommended by recent guidelines. (Section 3.10 gives more insight into perceived problems with the original leaflet).

Based on the literature reviewed, it was therefore considered that a leaflet should:

i) be designed with the specific population for who it was intended in mind regarding images and occupational postures etc.

ii) contain specific advice and re-assurance as suggested by recent guidelines provided by different countries despite the fact that these countries possibly had different population groups in terms of income and socio-economic status

iii) be designed according to the stated needs of the population it was intended for after research to find out what those needs were.

iv) not contain information about specific exercises, as this was an area of controversy.

v) be designed according to guidelines on the layout of information for health education.

This study was conducted in two stages. Stage 1 consisted of the development of a new population specific Information Leaflet. Stage 2 tested the impact of the new leaflet.

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3. Stage 1- Development of Population Specific Information Leaflet

3.1 Methodology

A descriptive cross sectional analytical study was conducted.

Subjects: Fifty adults were recruited from the practice doctor from May until November 2005. The researcher attended the clinic once a week during that time. Subjects were over the age of 18 years and attended the clinic to consult with the doctor for an episode of ALBP, defined as pain of recent onset originating from the back and in an area bounded by the 12th thoracic vertebra and 12th ribs superiorly, the gluteal folds, inferiorly, and the contours of the trunk laterally. The *inclusion criteria* required written consent; an age of 18 to 80 years; consultation for a new episode of ALBP and an ability to understand English. The exclusion criteria were the "Red Flags", i.e. indicators of serious pathology identified from the literature and listed in Table 3 below.

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Table 3: Red Flags

***Exclusion criteria* were "red flag" signs and symptoms including:**

- Cancer that could be responsible for the pain
- Unexplained weight loss
- Immuno-suppression
- Prolonged use of steroids
- Intravenous drug use
- Urinary tract infection
- Fever
- Significant trauma related to age (e.g., fall from a height or motor vehicle accident in a young patient, minor fall or heavy lifting in a potentially osteoporotic or older patient or a person with possible osteoporosis)
- Bladder or bowel incontinence
- Urinary retention (with overflow incontinence)
- Major motor weakness in lower extremities
- Pregnancy

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3.2 Instrumentation

South Africa has no base of information regarding any aspect of LBP. Because of the wide variety of predictors of LBP and the lack of information about LBP in South Africa it was decided to use information about possible causes of LBP to form a questionnaire to establish a profile of people seeking care for LBP as a starting point for further investigation.

Compilation of Lifestyle Questionnaire:

Based on the literature review and the 20-year experience of physiotherapy of the researcher, 116 questions were included in the Lifestyle Questionnaire. It was constructed in three broad sections covering demographic topics (58), attitudes to LBP (18) and finally LBP history and perceived needs with regard to the LBP (40). The first 58 questions included questions on a mixture of demographic topics and their inclusion is justified with reference to relevant literature.

The first questions were aimed at eliciting general demographic information such as ***age, gender, height,*** (all which may affect the occurrence of LBP) and ***marital status. Weight*** was included as a link between obesity and LBP was established in the literature review (Kaila-Kangas 2003). ***Level of education*** was included because of suggested links between LBP and low educational status (Brage, Sandanger et al. 2007). ***Socio-economic status*** was established on monthly income and number of people this income supported as the literature records links between socio-economic status and LBP. ***Occupation*** was useful in order to categorise subjects into different groups regarding occupation type. This would facilitate comparison with other studies and give an instant understanding of the predominance of possible postures, stresses on the spine. A question regarding ***dwelling type*** had a demographic value but was specifically useful to allow the researcher to understand the community for which the leaflet was being developed. In this community some people lived in brick buildings with their own garden with facilities for washing etc., other subjects lived in flats and had to use a lot of stairs which could be significant regarding the carrying of heavy loads such as washing and shopping, while other subjects lived in informal dwellings such as shacks.

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Behaviours were explored with several questions. ***Sleeping habits*** such as type of ***sleeping surface*** were explored motivated by literature findings relating sleeping surface to LBP. ***Physical Activity*** outside work, type and quantity was included in the light of recommendations in literature and current guidelines on LBP regarding exercise (Thomas, Silman et al. 1999; Bahr, Anderson et al. 2004; Liddle, Baxter et al. 2004). It was felt it would be useful to understand the current position of exercise in the lives of the subjects attending the clinic with LBP in order to gauge the wording of any information being given in the leaflet being compiled. If subjects were on the whole not doing any kind of exercise it might be important to use words that would strongly encourage the use of exercise. If the type of exercise being done was perhaps considered to be detrimental for a person suffering from LBP such as for example an exercise that could be associated with those postures and activities which could contribute to LBP, it may be then be necessary to include suggestions of the type and amount of exercise useful to sufferers of LBP in the leaflet. Links between smoking and LBP were discussed in the literature review, (Thomas, Silman et al. 1999; Kaila-Kangas 2003; Akmal 2004) leading to the inclusion of questions about smoking behaviour. It is well documented that overuse of alcohol leads to nutritional deficiency as well as causing other problems such as cirrhosis. It has been postulated that the nutrition of the IVD may be compromised by alcohol abuse and contribute to LBP (Urban, Smith et al. 2004). Thus ***alcohol*** use was explored in the questionnaire. Similarly, poor ***nutrition*** itself in the same way may contribute to the incidence of LBP and questions about nutrition were included in the questionnaire.

The next group of questions explored issues relating to ***physical activities around the house.*** There are not many studies to be found on LBP in the home environment, although gardening and "yard" work have been linked to LBP (Kopec, Sayre et al. 2004) but questions were included on posture and activities at home that were thought to be possibly relevant to LBP as there is no reason to assume that activities at home could not be as strenuous or heavy as at work.

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The reporting of repetitive and sustained work postures contributing to LBP in the literature motivated the inclusion of questions around ***activities and postures at work.*** Questions asked here were related to twisting, bending, and working in awkward postures, sitting for long periods and lifting heaving weights. A question was included about how many hours the subject thought they might be likely to be in these postures – if they only spent 5 minutes in a certain position it may be deemed less relevant than a posture that was maintained for 3 or 4 hours. ***Working hours, shift work, overtime and holidays*** were also explored, as was length of time of current employment and previous employment. ***Transportation to work*** as evidence has been reported linking type of transport to work with LBP.

Questions related to ***stress*** were included to explore the occurrence of major life stresses in the previous year. The questions asked about marriage, divorce, financial problems, moving house, problems with children, problems with sleeping, problems meeting expenses, and problems that may occur at work. Subjects were also asked if they talked about problems - talking about problems apparently decreases stress – as an indication of whether stress was being dealt with at all. These questions on stress were included as a result of literature findings (Thomas, Silman et al. 1999; Hoogendorn, van Poppel et al. 2000; Kopec, Sayre et al. 2004; Takeuchi, Nakao et al. 2004; Brage, Sandanger et al. 2007) to inform the development of the information leaflet regarding the value of including information on stress.

Other health problems – the literature review comments on the occurrence of LBP together with other health problems so a question on this was included to establish if this community of people with LBP also had other types of health problems and what they were (Hartvigsen, Christensen et al. 2004; Hartvigsen, Christensen et al. 2004; Hestbaek, Leboeuf-Yde et al. 2004; Smith, Blair H., Elliot et al. 2004).

The second section consisted of 18 questions, which were included to try to find out about the attitudes of the people seeking help for LBP at this particular institution. This was done with the aim of increasing understanding of the population to guide wording information selection of the leaflet.

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The first three questions were: "what do you think causes LBP", "why do you think you have LBP" and "what is the best way to deal with LBP". If many subjects had no idea of what was causing their pain, information about possible causes of LBP might need to be more descriptive in the leaflet than if the subjects already had a basic understand of some of the possible causes.

The perceived role of health care practitioners was explored through questions about doctors and physiotherapists.

In order to see whether subjects thought LBP was a serious problem, a question was asked if the subject thought they could die from LBP. Guidelines suggest that patients attending consultation for LBP need re-assurance and this would need to be emphasised if they perceived LBP to be life threatening.

Family history of LBP was considered to be a useful demographic question in the light of information regarding genetics and LBP discussed in the literature review (Hartvigsen, Christensen et al. 2004).

A question to find out how subjects rated the importance of ***X Rays*** was included as they are not a suggested investigation in some current guidelines on treatment of LBP for the first 4-6 weeks in most cases and there are apparent risks with "unnecessary radiology" (NZACC NZGALBP 2003). If subjects felt an X-Ray was important it would make sense to try to inform them in the leaflet that they may not always be necessary or useful to understand and treat LBP.

The issues of medication and LBP (Vogt, Kwoh et al. 2005) have already been discussed previously in the literature review (Van Tulder, M. et al 2000; Bernstein, Carey et al. 2004; Dillon, Paulose-Ram et al. 2004; Luo, Pietrobon et al. 2004). It was considered important o find out what patients thought about medication and LBP to assist with designing appropriate inclusion and wording. For example, if patients did not think medication was useful perhaps it would be necessary to include information to reinforce the possible benefits of medication in order to encourage patients to take any medication prescribed to them.

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Another question on ***exercise*** was included in this section aimed at understanding the importance the subjects placed on LBP and exercise themselves with the view to word the pamphlets accordingly. If subjects on the whole did not think exercise important it would be necessary to emphasise the importance of this kind of back care intervention.

Questions about previous history of LBP were asked to have a better understanding of the type of LBP presented at this clinic (acute or chronic). This would have many important ramifications with regard to the management of LBP (NZACC NZGLBP 2003), particularly with regard to the psychological status of the person with LBP (Cairns, Foster et al. 2003).

The third section of the questionnaire consisted of 40 questions. The first 25 were questions directed specifically at the current episode of LBP and included questions regarding expectations about the doctor, to understand how much importance the subject had placed on the visit, their expectations regarding the visit and if they felt they had been given a solution. They were asked if they had tried any other treatment themselves to understand whether people were taking initiative regarding their health and if so, if this initiative had any useful foundation and where it might have been obtained from to determine whether they had thought of the intervention themselves or had someone else suggested something.

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Subjects were also asked if they had any other problems at the moment and if those problems were more important than the LBP to gauge insight into how people perceived the impact of other life stresses in relation to LBP.

Questions were asked to gauge the impact of the pain on different aspects of their lives at work and at home. Subjects were asked if they felt they were in control of their pain and how much permanent damage they thought they had, if it was easy to hurt the back and if they were worried about the pain. This aimed to provide some insight into the possible occurrence of health distress and locus of control/empowerment and the possible need for re-assurance and other such interventions to decrease distress and increase perception of control.

The final section consisted of 15 questions related to the subjects perceived needs regarding LBP. These questions were modelled on the results of the Back Home Trial (Roberts, Little et al. 2002) The BACK HOME Trial used a baseline questionnaire of 27 questions to try to identify what patients would like to know about LBP. Twelve of these questions were chosen to include in this questionnaire with the same or similar wording as in the BACK HOME Trial. Fifteen questions on further treatment were not included as they were not considered appropriate in this setting or had already been covered in previous questions.

The final questionnaire is found in appendix 7.2.3

3.3 Procedure

The procedure followed in Stage One of the study was as follows. Ethical approval was gained from the University of Cape Town Medical research Ethics Committee. Permission to work within the clinic was sought from the relevant authorities.

The medical practitioner at the clinic recruited subjects. She was requested to identify potential subjects attending the clinic seeking help for an episode of ALBP taking the inclusion and exclusion criteria into account. Once the doctor had identified a patient suitable to be a possible subject, the doctor then asked the potential subject if they would like to participate in a study on LBP. If they agreed they were asked to go to the room where the researcher was conducting the study. In this part of the study, the subjects saw the researcher on the same day that they attended the clinic for their initial complaint.

On meeting with the researcher, the candidate was given an information sheet and verbal explanation of the study and procedure to be followed (Appendix 7.3.1). If they again agreed to participate they were given a consent form to sign. All subjects were provided with information regarding the study.

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A self -designed Lifestyle Questionnaire (LQ) (Appendix 7.2.3) was used to look at the lifestyles of the people in Community X to examine the determinants of LBP. After the first 10 subjects were interviewed, the responses were reviewed for any problem questions (i.e. any questions that might have been ambiguous or confusing to the subject) and the necessary adjustments were made. On completion of the pilot, 50 further subjects were interviewed to complete data collection in the first stage of the study.

The responses were analysed to investigate lifestyle factors common to this group of patients with LBP. These factors were used, together with scientific evidence-based knowledge from relevant literature and suggestions from relevant health professionals to compile an information brochure for the people in Community X suffering from an acute episode of LBP.

3.4 Ethical considerations

There were no apparent risks to the participants of this study. The subjects' inclusion in the study was anonymous as were their responses. They could withdraw from the study at any time with no repercussion. The study did not interfere with the normal treatment they would have had, it took up a relatively short period of time, and most subjects seemed pleased to be able to participate in a project that may help other people. In addition, all subjects were provided with an information sheet on the management of ALBP compiled by the researcher from scientific evidence already reviewed.

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3.5 Data Analysis

Descriptive analyses were used to identify which activities subjects had reported most commonly resulted in LBP including where and how these activities had been performed. Topics regarding what subjects wanted to know about LBP and how to deal with it were also identified. Descriptive analysis also revealed why subjects thought they had LBP, how they were currently dealing with it and what subjects wanted to know about LBP. All these things were considered together with evidence from current literature to form the basis of the information sheet that was developed

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3.6 Results

The results were reviewed first by looking at the *demographic information* collected from the initial sample about the lifestyles of patients attending the clinic with an episode of ALBP. Statistics were compiled regarding sleeping, smoking, alcohol use, exercise, the type of work that these subjects were occupied in, amount and type of activity done during the day/week and if the subjects reported suffering from any financial and/or relationship stress. Results were gathered about the LBP itself including factors which subjects thought had contributed to their LBP, if they were concerned about it and how it affected their lifestyle as well as possible use of medication, satisfaction with medical practitioner input, thoughts about X-Rays and lastly what subjects wanted to know about LBP.

Data has been included on the *demographics of the LBP* together with any previous treatment that subjects had had for their LBP. G*ender differences* in relation to occupation, age and BMI have also been reviewed.

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Demographics

The sample consisted of 50 subjects, of which 13 were male. Twenty-three of the subjects were married, 11 widowed or single and five were divorced. The mean ages were 50.7 years (SD 14.0) and 54.1 years (SD 15.1) for males and females respectively. In terms of education, 15 of the subjects had only had 6 years or less at school and none had post-school education.

BMI

The mean BMI was 32 (SD=5.3) for males and 31.1 (SD=6.3) for females. Using the Centre for Disease Control classifications (Centre for Disease Control USA) (table 4), ten were overweight and 18 were obese.

Table 4: BMI Categories

BMI	Weight Status
Below 18.5	Underweight
18.5 – 24.9	Normal
25.0 – 29.9	Overweight
30.0 and Above	Obese

As a result of this finding on obesity and the recognised link between obesity and LBP (Govender 2004), a separate information leaflet was compiled with information sourced from the British Heart Foundation (BHF 2005).

Socio-economic factors

Table 5 lists the *employment categories* of the subjects. Categories used to describe occupation were obtained from the South African Department of Labour (South African Department of Labour 2007). Thirty three percent of subjects interviewed were Service and Sales Workers, 24% worked in the Craft and Related Trades Category and 16% were Pensioners.

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Table 5: Employment Categories from Lifestyle Questionnaire

	Frequency	Percent
Service and Sales Workers	15	30
Craft and Related Trades	12	24
Pensioner	8	16
Disability Grant	3	6
Clerk	3	6
Elementary Occupations	2	4
Unemployed	2	4
Retired	2	4
Homemaker	2	4
Medically Boarded	1	2

All subjects except four lived in brick constructions. Thirteen lived in flats and 32 in houses. Twenty subjects who lived in houses had more than five stairs in their homes. The family income ranged from R250.00 to R10 000 per month. Twenty-three subjects earned less than R1000 per month and 14 between R1000 and R2000 per month.

Lifestyle factors

Twenty-nine people reported sleeping between six and eight hours a night. However, only 15 people said they slept well at night. Regarding sleeping surfaces, figures were fairly evenly split with 24 people indicating they slept on a soft surface and 25 on a hard surface. As 50% of subjects slept on a soft surface, information regarding sleeping surfaces and position was included in the new leaflet.

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Thirty-three people reported exercising for up to five hours a week, nine did not exercise and five exercised over five hours a week. The most popular activity was walking reported by 28 people, two people attended gym, one played golf and one was a soccer player. Six said they did exercises. Although many people indicated that they were involved in a lot of exercise this did not seem to correspond with the high incidence of obesity. Information on exercise was thus created in a separate leaflet targeted at people who were obese in addition to the mention of the importance of exercise in the main leaflet on dealing with LBP.

Twenty-one subjects were smokers, ten smoking up to five cigarettes a day, nine between five and ten and two more than ten. Of the 29 people who were not smokers, 18 had previously smoked. Of the 35 people who were or had been smokers, 12 had smoked for 10 years or less, eight between 10 and 20 years and 15 people had smoked for over 20 years. The importance of not smoking was listed in the main leaflet with a separated information leaflet drawn up for smokers with information on how to give up smoking.

Eighteen people said they drank alcohol, with 1-6 quarts of beer per week being the most popular drink. Two people drank wine and two spirits. Mention was made in the leaflet on weight loss about limiting alcohol intake, as there is evidence that alcohol contributes to weight increase.

Twelve people said they took nutritional supplements. Thirty-two people felt they had a healthy diet. Reporting on what constituted a healthy diet was very variable but 28 people mentioned that vegetables were necessary for a healthy diet. Information about aspects of a diet that contributed to making it healthy was included in the leaflet on weight loss.

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Activity

Twenty-eight people worked in the garden, with most of these subjects reporting normal garden activities such as sweeping, weeding, raking and planting. Twenty-four people lifted heavy objects at home with most of those people (19) saying they lifted furniture. Thirty-one said they carried heavy loads, with shopping (21) accounting for most of the heavy loads and wet washing (5) a smaller proportion. Pictures of people working in postures that minimise stress on the back in many of the above activities were included in the new leaflet.

Of those that were working, 33 worked up to eight hours a day and 11 worked 8-12 hours. Twenty-seven people worked a five-day week and six worked over five days a week. Fifteen people had less than two weeks holiday a year and 14 between two and four weeks. Eight people worked shifts, with 20 doing overtime, 14 of those did up to eight hours overtime a week. Seventeen subjects had had sick leave in the previous year with seven having had more than 12 days.

Stress

The most stressful part of living in this resource poor community seemed to be related to *finance;* 26 of the subjects reported financial problems and 30 did not meet their expenses with their salaries. Despite this 32 respondents reported liking their jobs. Eleven people had problems with their children while only one reported problems with relationships and apparently only two had ended relationships in the previous year. Twenty-three people did not talk about their problems with anyone.

A separate information leaflet was composed under the heading stress and tension. It described stress through provision of examples of symptoms and listed simple suggestions on how to deal with stress. Another information leaflet compiled described two tools that can help with stress, meditation and exercise and gave simple instructions on these.

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Details of LBP

Sixteen subjects related their pain to a specific activity such as lifting, while 14 gave their own anatomical description of damage in their bodies they thought was causing the pain. Simple pictures of the anatomy of the most common causes of back pain were included in the new leaflet as was information regarding the importance of lifting correctly with the correct posture.

Answers to questions in the section that addressed fears about back pain included the following: 44 people thought it was easy to hurt the back, 30 were worried about their back pain and 23 subjects reported that they worried a lot about the pain. 30 people said the pain was having a big impact on their lives. Thirty-three people thought the pain would recur and 20 thought they would not recover 100% from the problem. Forty-one people thought the pain would not get better on its own. Only nine subjects said they had problems in life that were greater than the problem LBP. This information seems to indicate that perceptions of LBP are a possible source of stress. As has been mentioned, one of the main points often included in guidelines for the management of LBP is that of reassurance, the above answers confirm that in this case, the people questioned in this study do have a lot of concerns about LBP which need to be addressed. As a result of this time was taken to consider the inclusion of reassuring statistics – i.e. only 5% of people with LBP usually end of having surgery. People were told in the leaflet that back pain is "very common" and normally gets better within 4 weeks. They were warned however that it can return and so care should be taken and instructions followed on how to do this.

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Twenty-five people had had to stop work because of the pain, 26 stopped doing housework and 24 had stopped doing exercise. Thirty-seven people had stopped social activities because of LBP. These results do not indicate why people reduced their activities. Did they reduce activities because the pain itself was prohibitive, or because of fear: fear of initiating pain or fear of damaging the back? The new leaflet informed subjects on the importance of keeping moving while avoiding aggravating movements and keeping the body relaxed as recommended by many of the recent guidelines referenced above. It also emphasized that moving was good and not dangerous.

Thirty-two subjects said they had difficulty getting dressed when they had pain. Specific advice regarding putting on shoes and socks was included on the new leaflet.

Thirteen people had had LBP for more than 10 years. This is an especially important issue and this aspect is considered in recommendations for future studies. This factor was not specifically addressed in the leaflet.

Management of LBP

Forty-eight of the respondents knew what an X-Ray was and a high proportion 45, thought an X-Ray was important to treat LBP. Current guidelines move emphasis away from using X-Rays as a form of diagnostic intervention for LBP and to try to inform sufferers of this, the new leaflet stressed that an X-Ray does not always show the cause of low back pain.

Belief in medication was quite strong with 39 people feeling that medication helped LBP and six thought it might help. It is well documented that anti-inflammatories help low back pain (Van Tulder, M. et al 2000) and their use is mentioned in the new leaflet.

A large proportion of subjects, 36, thought exercise could help. Twenty-six said that lying in bed was not a good thing for LBP. This finding contradicts results already mentioned indicating that these subjects reduced their activities because of their LBP. There does not appear to be a link between what subjects actually think is good for them and what they do - their behaviour. The difference between knowledge and behaviour is an important concept for health professionals to consider with regard to health education and has briefly been discussed in the literature review.

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Thirty-Five subjects had tried to treat themselves in some way with heat (6), massage (6), ointment (6), their own medication (6) and rest (5). Two had tried hanging/stretching to get rid of the pain. It seems that subjects were keen to try to help themselves in some way but it was not determined where the ideas for these treatments came from or why they had been tried. The message of the new information leaflet was based around the patient taking control of the problem with specific mention made of self-treatment with massage and heat as research results discussed in the literature showed positive effects of heat and massage for LBP. Although the results of these types of 'treatment' were not specifically related to home use, it was felt that by giving people with LBP something simple and practical to do at home for the pain that could possibly be useful, may give them some sense of empowerment and control. Levels of distress due a feeling of lack of control may decrease as a result.

Nine subjects said they had heard of other types of treatment for LBP. Four mentioned physiotherapy and three, chiropractic. The main expectations people gave for their visit to the doctor was for an examination, 19, and then prescription of medication, 17. Advice and explanation was less expected, conflicting with published studies suggesting that these are the main reasons people visit the doctor, with six subjects expecting advice and two an explanation.

Thirty-three people felt the doctor had given them a solution to the problem. Twenty-three expected nothing else and ten felt they wanted referral for other advice/treatment/tests.

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What Subjects wanted to know about LBP

When asked what else they would like to know about LBP, 15 said they would like to know the cause and 12 how to relieve the pain. When asked about specific information on LBP that might be useful, all subjects indicated they were interested in finding out *how the spine worked*. Forty-nine (98%) wanted information on *lifting, exercise, pain management, how to sleep correctly, how to cough and sneeze*, and how to change the way they did things when they had pain. Forty-eight (96%) people wanted to know when to *begin exercise*, and *how to manage daily tasks* – and answers to these questions were included in the leaflet. Forty-five (90%) wanted to know *how to manage their jobs when they had pain* – this was a difficult to address in the leaflet due to the wide variety of occupations of the subjects. However, many pictures on the best postures to use in different types of activities were included to address this. 43 (86%) wanted information on *how to help themselves with the pain* and as has been mentioned this information was included. The same number of people wanted to know *how to keep fit* – advice about exercise was included but it was felt that providing information about fitness would require more information that might detract from the main messages of this particular leaflet and that should be presented in a different leaflet. A separated leaflet specifically on exercise was created for this purpose but was not tested.

Although advice on and explanation of low back pain were not especially expected of the doctor and it was noted above that subjects were on the whole satisfied with their visits to the doctor, when specifically asked, most subjects said they were interested in finding out about the spine, how to do things correctly at home and work and how to exercise and help themselves when in pain. Hence all these topics were included in the new leaflet.

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The patients appeared to have a high level of satisfaction with their visit to the doctor but there were still many things they wanted to know about their problem. Initially 23 said they needed no more information, however, when asked questions about specific types of information that might be useful more than 40 said they wanted this information. It seemed therefore that subjects still wanted to know a lot more about their problem of LBP even though they were satisfied with their visit to the doctor. Subjects may want to know more but may not expect this information to be provided for by the doctor. Eighty five percent had had back pain previously, most of who were treated with medication. If subjects were visiting the doctor for medication and they received it they would be satisfied. Every subject who was interviewed had been provided with medication. Previous experience may also have taught subjects to expect nothing more.

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3.7 Discussion

3.7.1 Introduction

The main outcomes and findings of stage one are as follows. A comprehensive description of the demographic, impairment and functional limitations of the subjects was developed resulting in the production of a population specific Information Pamphlet. The discussion section will examine these results but will start by examining the adequacy of the sample. The demographic and life style characteristics are then discussed with relation to LBP. The risk factors present in the respondents are discussed. The activities, which exacerbate pain, are compared to literature and the expressed needs of the participants are compared to other studies. The information contained in the information sheet is discussed and the results of the intervention study are placed in the context of other similar studies. Finally, the flaws in the study and way in which results can be generalised are presented.

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3.7.2 Sample

In some respects the sample[1] was satisfactory in that the respondents were similar to residents of other under-resourced areas in Cape Town. The majority of the sample were of mixed ancestry and had had limited access to education. This compares to the 2001 census data for the area in which 98% were of mixed ancestry and 55% were between 18 and 54 years of age. As is often the case with clinic based surveys females were over represented. It is not clear whether this is a reflection of the greater susceptibility of women to LBP (see below) or to the greater use that females make of clinic services compared to males. The census sample also reported a low educational level (34% had only primary school education or less and 47% had not completed high school). More respondents were not employed (60% of the census sample were employed) and of those that were, all were in elementary occupations compared to only 33% in the census sample. The sample was therefore not representative in that women were over represented, as were the unemployed and those engaged in manual occupations.

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[1] The samples referred to here are the participants of the intervention study.

It is unlikely that the sample is representative of all LBP sufferers in the area. A clinic-based sample is always biased in that those who have less pain may not attend and those who have severe pain may not be able to reach the clinic, particularly in a community where there are few private cars. In addition, people with LBP who have the financial resources or are on a healthcare insurance plan may choose to go to a doctor in the private sector. This might be reflected in the larger number of unemployed participants and manual workers in the sample compared to the census data from the same area. However the intention of the study was to investigate the needs of those who access the clinics, as this group of patients is more likely to be financially burdened and disempowered. There is another option - people with LBP in this community may choose to treat themselves with over the counter medication for pain for example. Thus this sample is only representative of people with LBP in this community who seek care at a local clinic.

3.7.3 Characteristics of the sample

Many factors previously linked to LBP were present in the participants. A high percentage of the subjects with LBP were obese and obesity has previously been linked to LBP (Govender 2004). However a new study has also claimed a link between genetics and obesity (News 2007). It remains to be investigated whether this particular ethnic group of subjects have genes that are more likely to lead to obesity.

This study contained a higher proportion of women (71%), and that is consistent with other studies that women *report* LBP more frequently than men (Cecchi 2006). It has been reported that women are more sensitive to pain than men and are more likely to seek medical treatment for pain than men (Takahashi N. 2006) and most studies report that women *suffer* more from LBP than men (Sydsjo, Alexanderson et al. 2003; South African Department of Labour 2007). However, other studies in the Western Cape, using clinic based samples report a similar preponderance of females (Jelsma, J., Mkoka et al. 2004) and as females apparently make greater use of public facilities and respond more readily to participation in surveys, the gender distribution might not necessarily be due to a greater incidence of LBP in females.

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Gender differences of age (the men of the sample were older) and BMI (higher in women) were not significant, indicating that the ages and BMI of men and women with LBP in this study followed a similar trend.

A high percentage of the subjects were smokers with 51% currently smokers and 17% had previously been smokers. Smokers with LBP are apparently hospitalised more often than non-smokers for their LBP (Kaila-Kangas 2003) but there are conflicting studies regarding the association between smoking and back pain. It has been suggested that there is a link between smoking and disc degeneration (Keneda, Kazuhiro, Yasumasa et al. 2001; Kaila-Kangas 2003; Battie, Videman et al. 2004; Roughley 2004).

The level of education of this group of subjects was not high – with 78% not reaching the year when the school matriculation exam was taken. Studies have indicated conflicting results when looking at the association of LBP and levels of education (Foppa and Noack 1996; Takeyachi, Konno et al. 2003; Takeuchi, Nakao et al. 2004) but as has been previously mentioned – subjects with a lower level of education may have to rely on jobs that are more physically demanding for their occupation.

It would appear that many of the participants fitted the typical profile of LBP sufferers.

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3.7.4 Physical Activities precipitating and exacerbating pain

The second objective of this study was to establish *activities precipitating and exacerbating pain*. Occupation was classified according to the SA Department of Labour (South African Department of Labour 2007). Specific occupation as an indication of activity showed a high percentage of domestic and other manual workers in this community.

The geographic location of the community does lend itself to some occupation specific categories – there is a large bakery nearby which employs many of the subjects interviewed in this study. Subjects interviewed were often employed in different areas of the bakery, but many reported heavy lifting as a component of their work such as lifting heavy bags of flour, buckets of cream and cake mixture. There is also a gemstone factory in the vicinity that employs many residents of this area and some of the subjects represented in this study. In this factory employees are often required to lift heavy stones to enable them to be cut into smaller stones to access the gemstones. Workers are also involved in sorting the stones, which requires them to be lifted onto tables in order for them to be sorted. The community has a long history of involvement in the fishing industry, as it is located next to the sea. There are different types of fishing activities. One type of fishing that is special to this area is "Trek" fishing. "Trek" is Dutch for pull and refers to the pulling in of the net (Wikipedia 2007). In this practice a net is taken out to sea by a small boat and then fishermen on the beach pull the net in together with the fish they have caught. It is a very physically demanding job. After the fish have been landed they have to be lifted by hand from the beach onto a truck. The fish most commonly caught in this way are Yellowtail, which can be large and heavy with an average weight of 3.5kg. These activities do not generally require high levels of education and as the demographic information of this survey shows, the education level of this group of people is not high with only 10% of the sample reaching the last three years of school.

A Canadian study in which over 10 000 subjects were interviewed, "heavy work" appeared to be a predictor of back pain in men (Kopec, Sayre et al. 2004). Another study in the United States used interviews of 568 patients seeking treatment for acute occupational LBP to assess disability risks for LBP. These subjects had to complete a questionnaire at the time of their first visit to the clinic and were required to call a computerised data collection system four weeks later. Overall the subjects of the USA sample had a higher level of education and a lower rate of obesity than subjects in the present study and were not from a resource poor area. However, in this American study looking for predictors of LBP, those subjects who were involved in jobs that were more physical seemed to be more likely to have greater limitation of function (Shaw, Pransky et al. 2005).

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The MORGEN study carried out in the Netherlands looked at physical load in different professions of 22 415 people regardless of the presence of back pain – the subjects were less obese than the subjects of the current study with only 10% having a BMI of more than 30kg/m. Less of the subjects were smokers, 35%, the age group was similar, with a mean age of 46, although the percentage of men was higher at 45%. The educational level of the subjects was higher as 24% had gone on to college or university after leaving school. 50% of the respondents had experienced LBP in the previous 12 months and 13% attributed LBP to specific activities involving physical loading of the spine. As a result of the MORGAN study it was suggested that safe lifting and handling education programs could target prevention of these postures during working activities (Pivavet and Schouten 2000). It is interesting to note in the light of the above, that in the next part of the present study, 85% of subjects interviewed related their pain to a work-related lifting activity.

The MORGEN study also indicated risk factors outside of work such as household and do-it-yourself activities (Pivavet and Schouten 2000). Regarding home activities in the present study, the collection of lifestyle data indicated that 56% of subjects reported working in the garden doing activities such as sweeping, weeding, raking and planting. 62% of subjects said that they carried heavy loads, 42% of which was grocery shopping. It must also be remembered that few respondents owned cars and used available sources of public transport such as buses and taxis. Both gardening and carrying heavy loads on public transport could involve postures related to the risk factors for LBP identified in the MORGEN study such as: "lifting, twisting; pulling, pushing, bending." (Pivavet and Schouten 2000). It does seem likely that, regardless of demographic background, physical load could be an important factor in LBP.

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A high percentage of the respondents in the current study were on disability pension or were retired – no provision was made to record previous occupations of the subjects. Subjects who were retired or currently employed in a more sedentary job might have been previously employed in a physically demanding job. It might be more relevant to ask subjects if they had ever done a job that involved certain physically demanding activities, how long they had performed that job for and if they had ever had an episode of back pain while employed in such a job. Conversation with one particular subject in the pilot study who was 75 years old and on a pension, revealed that she had had many previous types of employment – she had spent her first working years employed as a grape picker which had involved many hours bending over vines and lifting heavy baskets filled with grapes. After that she had had numerous other activities some that were more physically demanding than others.

3.7.5 Psycho-social Influences

The high levels of financial related stress possibly involved in this low-income community, were revealed as 60% of respondents reporting that they did not meet their expenses with their salaries. This could be relevant in terms of disability from LBP related to stress as mentioned in the literature review (Takahashi N. 2006).

Regarding *beliefs about LBP* itself, it is apparent that this is something that could be a problem as 82% of subjects thought their LBP would not get better on its own, 88% though it is easy to hurt the back, 46% worried a lot about the pain and 60% said the pain had had a big impact on their lives. This appears to be consistent with previous research carried out in other population groups. For example, in a telephone survey of 1200 subjects in Canada, of the 83% who had had at least one episode of LBP in their lives, 50% of these subjects thought that LBP "gets progressively worse, makes everything in life worse and eventually stops you from working" (Gross D.P. 2006).

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Activity reduction due to LBP was apparent with 50% of subjects stopping work, housework and exercise. Social activities took a higher toll with 74% of people reducing social activities due to LBP. This is higher than the Canadian study that indicated 27% of subjects taking time off work for LBP – however this figure is 27% of all their subjects – not 27% of subjects with LBP, although as has been indicated a high number of subjects did indicate a lifetime incidence of LBP (Gross D.P. 2006). It is important to remember the suggestions that beliefs about back pain are important predictors of delayed recovery (Swinkels-Meewisse I.E.J. 2006).

3.7.6 Determination of need

Regarding *need*, the Lifestyle Questionnaire established what the subjects wanted to know about LBP. Only a small percentage of subjects expressed that they wanted intervention from the medical practitioner other than the prescription for medication that they had received. Perhaps subjects had a perception of the role of the doctors as being prescriptive and medication the main treatment prescribed for any illness. This would require further questioning to understand. As many of the subjects had had previous consultations for LBP this perception might have arisen as a result of experience. However, it must be remembered that 35 patients had tried to treat themselves so it does not necessarily mean they felt that medication was the only thing that might help their LBP.

Most subjects agreed however, *when asked specifically*, that they did want to know about the *cause* of the pain. This concurs with previous literature indicating that information is one of the main reasons people go to the doctor (Burton, Kim A, Waddell et al. 1999; Roberts, Little et al. 2002) and also links to a study in the USA where the main reason for dissatisfaction with medical care was "failure to receive an adequate explanation of LBP" (Burton, Kim A, Waddell et al. 1999). Guidelines for the treatment of ALBP do recommend that patients be given "accurate and up-to-date information and advice about LBP" (Burton, Kim A, Waddell et al. 1999).

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Over 90% of subjects wanted information on all different aspects of back pain and back care. While this does concur with results from the Back Home Study (Klaber Moffett, Torgerson et al. 1999), these were categories identified by subjects as topics in that study that they would most like advice about; these were not topics that were spontaneously identified with in this current study. However it is not quite clear whether these topics were pre-determined or spontaneously identified in the Back Home Study either. The high proportion of subjects agreeing that they would like certain information in this study does not show which information would be most important to them. It also does not indicate if there is other information they would like, how they would like to receive this information or from whom they would like to receive it. When presenting information to a disempowered community and getting a positive result on its value when no other information is presented, it is possible that you are reinforcing what health professionals think the subjects need to know. However, this current study has also showed, that often subjects did not have an answer and needed a lot of prompting when asked open ended questions about different aspects of LBP.

Largely the subjects were keen on having information similar to that laid down in guidelines for management of LBP. As has previously been mentioned, a "patient-centred" approach has been "recognised" as an important aspect of patient care. The term *patient-centred* has been introduced to imply an approach that revolves around the patient what the patient wants rather than the therapist (Potter and Gordon 2003) giving them "*empowerment*" or "confidence in their own capacities" (Wikipedia 2007).

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Apparently there is little knowledge in this group of subjects about other treatments that may be available for LBP, which is possibly indicative of their financial status and position in the health care system of South Africa. For example, there are 4892 registered physiotherapists in South Africa, (Central Statistical Office 1998) 600 are employed in the public sector serving 41 million people. A network of mobile clinics providing the "backbone" of primary health care provides employment for 280 physiotherapists (Central Statistical Office 1998). Only a small percentage of physiotherapists are employed in the public sector to serve 80% of the countries estimated 47 million population. In the region from which this sample was taken, the Cape Peninsula, the nearest physiotherapist is at the local hospital several kilometres away. There was no direct transport route to this hospital with people having to use at least 2 local 'taxi' services to get to and pay for the transport themselves. There is currently one physiotherapist employed at this hospital.

Although it has been suggested that medication, especially anti-inflammatory medication is useful in treating LBP – it seems that certainly with this group of subjects, the effect may only be temporary. There may be little else available to these subjects for LBP in relation to published guidelines provided by countries with a larger budget per capita for health expenditure. Spinal mobilisation as performed by Physiotherapists is one of the suggested forms of treatment for LBP mentioned in recently published guidelines for the treatment of LBP but there is only one therapist available for access by the community from which this sample is taken.

It is suggested that when treating LBP, sufferers should be encouraged to become more confident in taking responsibility for their health. A study done by the Departments of Occupational Therapy and Psychology in Durban, South Africa indicated that education in a group situation was useful in creating empowerment for people with a disability (Stewart and A 1999) reinforcing the importance of taking responsibility for health which is important to remember when considering future options for the management of LBP.

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3.8 Limitations of the study

The sample was essentially a sample of convenience and as such females were over represented. This might have biased the results in that females might be expected to engage in less strenuous activities than males.

Another limitation is that the participants were not used to being involved in discussion with regard to their health conditions and were still used to a paternalistic approach to medical treatment. This initially limited the amount of constructive criticism of the information and treatment that they had received.

A considerable amount of information was collected that was not all used or useful as some of the information was not detailed enough, e.g. the type of dwelling, formal or informal, was not necessarily relevant to the experience of back pain as there were no associations that could be made with the presence of LBP.

The major limitation of the study is that, although descriptive data were gathered, there was no control group without back pain and it was therefore not possible to draw causal relationships between the variables observed and LBP. In addition, the choice of a clinic-based sample also precluded making inferences regarding prevalence of LBP in the area.

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3.9 Conclusion and Recommendations - Stage 1.

The sample appeared to be representative of the population under study, although women were over represented. The prevalence of smoking and obesity was high and many reported high stress levels. There was a high percentage of domestic and other manual workers in this community and the nature of their activities put them at risk for development and exacerbation of LBP. The need for additional knowledge regarding the cause and prognosis of LBP was also expressed and evident, as few people knew what to expect with regard to the likely outcome of their pain.

The need for education and an information sheet custom designed for this population emerged as a clear priority.

There is a need for epidemiological data and it is suggested that the questionnaire that was utilised would yield useful information if administered to a large community based sample. It would then be possible to infer causal relationships and target the variables most implicated in LBP in future educational interventions.

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3.10 Implementation - Compilation of New Information Leaflet

The new Information Sheet was compiled based on the findings of Stage 1 of the study and taking into account the issues discussed above. It is presented in Appendix

The structure of the new leaflet was based on the suggestions of Simply Put (ODCP USA 2006), a document from an Office of Disease Communication and Prevention in the USA that provides guidelines for "easy-to-read" scientific and technical information. This document recommends restricting the information provided to that which is specifically required.

It emphasises the importance of specificity when instructing readers. Regarding information presentation: suggestions were that it should be logical, with headings, subheadings and bullets.

Language and pictures are apparently better received when culturally appropriate (the people that were photographed for the leaflet created for this study were people who lived in the community being investigated) and all technical language should be eliminated as far as possible or explained.

A conversational style of presentation using words and sentences that are short and chosen carefully is useful, as well as an attractive cover including the main message. Simple, instructive visuals may be helped by messages and captions placed near the text.

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It is important to choose the best type of picture for the audience and in this regard a lot of work went into using pictures of people in the community being studied for the leaflet. This was achieved by using pictures of subjects who participated in the first interview and were complaining of LBP and gave their consent to be photographed for the front cover. They were asked to assume a posture that could indicate LBP – two of the subjects used were photographed holding their hands to their back with an expression on their faces to portray discomfort. The third subject was sitting with her head in her hands as if to portray frustration. Later pictures included other members of the community involved in household activities involved in ironing, sweeping and doing other various household chores. In the study many women were employed in domestic cleaning activities and so women were used in pictures doing domestic type activities such as cleaning the bath. Pictures of the men were taken doing activities that required lifting and handling of heavier objects and twisting. The subjects used were from the local community and were photographed on a small vessel in the docks of Simon's Town, a place that many subjects from this community were familiar with and worked in. Pictures of people from the local community would hopefully be recognised and identified with by the readers. Activities related to occupations common to those listed as occupations of those participating in the study were chosen.

It has been highlighted that regarding content of leaflets about LBP, developing a leaflet according to specified needs of the patients themselves indicated an improvement in knowledge, attitude and observable behaviour (Roberts, Little et al. 2002). Thus, this approach was chosen for the current intervention design. While there was a leaflet already in use in the clinic where the study was to be conducted, this leaflet was not considered suitable for several reasons.

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Firstly, a heading in large bold print by the name of an anti-inflammatory drug which, patients were not usually as part of their treatment. The leaflet contained four different categories of information. The first item was a brief description of the importance of maintaining the curves of the spine. There were then six descriptions of important postures in different positions such as sitting and standing. These postures were not specifically related to activities that may be recognised by most workers from the community being researched. The pamphlet contained an item about the importance of rib angle for which there is inadequate evidence. The back page consisted of descriptions of 7 exercises accompanied by a diagram depicting these exercises. The issue of exercise inclusion in information leaflets on LBP has also questioned and is considered controversial. There were no recommendations about how many exercises to do, when to do them, how often to do them or any warnings about doing them. The exercises also seemed to contradict themselves and suggested techniques of flexion and extension. The leaflet contained no re-assurance and advice as recommended by recent guidelines. There was no suggested explanation of the cause of LBP.

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It was therefore considered that a leaflet should:

i) be designed with the specific population for who it was intended in mind regarding images and occupational postures etc.

ii) contain specific advice and re-assurance as suggested by recent guidelines provided by different countries despite the fact that these countries possibly had different population groups in terms of income and socio-economic status

iii) be designed according to the stated needs the population it was intended for after research to find out what those needs were.

iv) not contain information about specific exercises, as this was an area of controversy.

v) be designed according to specific advice regarding the layout of information for health education as advised by a considered reputable source.

Another suggestion by Simply Put indicates that if pictures of body parts are used they need to be realistic and placed in context with suggestions that a small picture of the body part should be placed next to a picture of the part of the body it relates to with an arrow linking the two. This format was used in the design of the leaflet with the information describing possible causes for the pain anatomically. The outline of a body with a diagram of the spine in situ was used with an arrow leading to an enlarged portion of the vertebrae detailing specific parts of the spine that could be subject to injury/disease. This second page was chosen to contain information about the most common causes of low back pain, another point that was raised by the respondents. This message was limited to three points with the caption 'What have I done to my back?' A short sentence of reassurance was placed at the bottom of the page.

Simply Put recommended that the document have margins of at least ½ inch with print of at least 12 points with serifs (feet) for easier reading. Use of text boxes, bolding and underlining are suggested. Text justified on the left only is better. Again these suggestions were all followed.

The new leaflet did not give instructions on specific *exercises*, as there is conflicting evidence as to the benefits of giving a general list of exercise to every sufferer of LBP and specific exercises were left out of the leaflet used in the BACK Home trial (Klaber Moffett, Torgerson et al. 1999; Soukup, Glomsrod et al. 1999; Descarreaux, Normand et al. 2003). The front page consisted of two short paragraphs aimed at *reassuring* subjects that back pain was very common and that few people who suffered from back pain ended up needing surgery. It also stressed the need to look after the spine and how you can learn to do this.

The third and fourth pages focussed on dealing with the pain and made suggestions in short sentences proceeded by a bullet and headed with the key word in bold. The suggestions that focussed on an activity had a picture of a person from the local community in the correct posture.

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The fifth and sixth pages illustrated good positions for the low back when at home and work – relevant activities were chosen from the pilot study and the people pictured were again from the local community involved in the study. A short bulleted description was linked to each posture. These pages also contained a suggestion that if the pain continued for more than six weeks the subject must return to the doctor. Studies show that the majority of ALBP settles within this time and if it has not it may be necessary to investigate why.

The seventh page gave recommendations for improving the health of the spine – this message was limited to seven important points, namely weight, diet, smoking, exercise, sleep and back care in general.

The back page reinforced the importance of exercise again and then listed a summary of seven important points from the brochure to remember.

The *original leaflet* had no information about causes of LBP, no re-assurance, no work-specific advice, no mention of specific ways to improve the health of the spine and no representation of the local community and seemed not to be presented in any specific way regarding text, headings etc. The *new leaflet* was more related to the community targeted in terms of their expressed needs, activity, current guidelines for management of LBP and current research and included relevant colour photographs.

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4. Stage 2 - Intervention with New Information Leaflet

4.1 Methodology

This ***sample*** consisted of adults (over the age of 18 years) who attended the clinic to consult the doctor for an episode of ALBP and who agreed to participate in the study. The *inclusion criteria* required written consent; an age of 18 to 80 years, and an ability to understand English and either read English or have someone at home that could read English. *Acute low back pain* was defined as pain originating from the back and defined in an area bounded by the 12th thoracic vertebra and 12th ribs superiorly, the gluteal folds, inferiorly, and the contours of the trunk laterally. *Exclusion criteria* were "red flag" signs and symptoms (see Table 3 above).

The first step of this study was a Pilot Study of 33 subjects done to test the Measurement Instruments being used.

Subjects were given a study number on recruitment. Prior to this, an assistant, who was not involved in subject recruitment, inserted 50 copies of the conventional information pamphlet and 50 copies of the intervention pamphlet into envelopes, which were shuffled and then numbered from 1-100. The assistant kept the information listing the envelope number and its contents until the end of the study. The envelopes were then given to the researcher to give to the subjects. Each subject received an envelope number the same as the subject number, the contents of which were not known to the researcher. In this manner the researcher was blinded as to which information leaflet was given to the participants. There were 16 envelopes remaining but the randomisation process did lead to almost equivalent numbers of subjects in each group.

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Data from a previous study in Cape Town (Jelsma J and Ferguson 2004) with the VAS EQ-indicated a standard deviation of a little over 20 was used to calculate sample size. Using Schoenfeldt's site at http://hedwig.mgh.harvard.edu/sample_size, it was determined that a total of 102 subjects would be required. The probability was 80 percent that the study will detect a treatment difference at a one sided 5% significance level, if the true difference between the treatments were 10 units. This was based on the assumption that the standard deviation of the response variable is 20. Post-hoc analysis confirmed that this number was a reasonable assumption of the standard deviation of the EQ-5D VAS scores.

4.2 Instrumentation

i) The current Information leaflet (control), which was currently distributed at the clinic (Appendix 7.3.4) and a new Information leaflet, which was compiled from the results of the Lifestyle Questionnaire and current scientific literature (Appendix 7.3.5).

ii) Pain was assessed prior to randomisation through a pain Visual Analogue Scale (VASp) which has been found to be reliable in a similar subject group (Jelsma, J, Machin et al. 1997) (Appendix 7.3.6).

iii) Health related quality of life and functional limitation were evaluated using the EQ-5D (Jelsma, J., Mkoka et al. 2004)(Appendix 7.3.7), The Roland Morris Disability Questionnaire (RDQ) (Roland and Morris 1983)(Appendix 7.3.8), a modification of each of the Stanford Health Distress Questionnaire (SHDQ)(Appendix 7.3.9) and the Stanford Chronic Disease Health Efficacy Scale (SCDHQ) (Appendix 7.3.7.3.11), and the Multidimensional Health Locus of Control Scale (MHLC)(Proqolid 2005)(Appendix 7.3.13).

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The isi-Xhosa version of the EQ-5D has been found to be reliable and valid when used with people living in a resource poor area of Cape Town (Jelsma J and Ferguson 2004). In addition it was found to be adequately responsive to change within a group of people receiving anti-retroviral therapy in the same community (Jelsma, J, MacLean et al. 2004). The reliability and validity of the RMQ and Stanford Questionnaires have already been mentioned in the literature review. The MHLC has also been found to be reliable - in this study version C of the MHLC was used. This is a disease specific version where the user needs to substitute the name of the pathology being investigated (in this instance LBP) in the relevant places in each question (Kenneth A. Wallston 2005).

4.3 Procedure

4.3.1 Pilot Study

The purpose of the pilot study was to test the measurement instruments. Eight males and 25 females were recruited as described for the main study above. The mean age was 53.3 years (SD=14.7, range 29-80). The subjects were given instructions at the beginning of each questionnaire and the questions were then read to the subjects and responses recorded by the interviewer. Visual analogue scales were used where appropriate.

The **EQ5D** was easy to administer but perhaps the range of answers were too small and uneven in the categories of self-care and usual activities. The answer options were "no problems", "some problems" or "unable", with the distance between "some" and "unable" being quite large. Subjects often spontaneously gave an answer that did not fit into any of these three categories.

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Subjects were often slow and seemed puzzled by the initial single straight line of the Visual Analogue scale **VASp** with the intensity of pain only being represented by numbers. This line was then changed to include blocks sized appropriately representing the numbers 0 – 10. The line was also linked to the words 'no pain' under number 0, 'moderate pain' under number 5 and 'worst possible pain' under number 10 to clarify. With this detailed visual aid subjects responded more quickly and with less confusion.

There were no problems in administering the Roland Morris Disability Questionnaire **RDQ** in the pilot study. All the questions were easily understood and were simple to answer for all subjects although sometimes there was a lack of congruity – a subject who was back at work would still indicate that they stayed in bed most of the time because of their back pain. A subject who had agreed that they sat down for most of the day would also answer that they stayed in bed most of the day. Despite these responses it was an instrument that was easy to administer and subjects had no hesitation answering any of the questions and it was decided to include this in the main study.

Subjects answering the questions selected from the Stanford Chronic Disease Self-efficacy Scale **SCDEQ** were given a visual analogue scale from 1 – 10 to help them and this helped speed up the response time. There were no problems administering this instrument.

A visual analogue scale was also created for Stanford Health Distress Questionnaire **SHDQ** and there were no problems administering this.

The most difficult questionnaire to administer was the Multidimensional Health Locus of Control **MHLC.** Each of the 18 questions had a choice of six answers – three choices of agreement and three of disagreement. This was the first problem; subjects became confused with the complexity of the range of answers. Creating a VAS and explaining the process in detail solved this. The subject was told that he or she would be asked a series of questions for which there were no right or wrong answers (to reassure that it was not a test. Many subjects had seemed quite stressed initially when they did not understand the questions or how to answer them) but that their opinion about each

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question was required. They were told they could either agree with the question or disagree with it and were showed the two parts of the VAS. If they agreed with the question they could agree with it a lot and indicate number three, a little and indicate number one or in the middle and indicated number two. The same process was involved for disagreement. The subjects were reminded that their answer had to be a number. This process facilitated the questioning enormously.

There were however, problems with wording of some of the questions as subjects had problems understanding all of them. For example the question: "If my LBP worsens, it is my own behaviour, which determines how soon I will feel better again" was changed to "If my LBP gets worse I can help it get better" and the question "Most things that affect my LBP happen to me by chance" – the concept of chance was often not understood and was changed to " My LBP can get better or worse for no reason". The questions involving the word "luck" were often not understood with participants asking for an explanation of the word. It was decided to leave this in as many people did understand it and a suitable alternative could not be decided upon. The question "If my LBP worsens, it is a matter of fate" was changed to "If my LBP gets worse that's the way life is" and this was much better understood as the word fate was often not understood. It appears that the words or concepts of luck, chance and fate in relation to help were not easily recognised by these subjects – whether this was an issue of culture, language or something else was not apparent. This community was predominantly bi-lingual and many residents spoke Afrikaans, the second official language of South Africa, more frequently even though they were fluent in English.

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At one stage in the Pilot Study it was thought that this questionnaire was too problematic to be used, however nothing else suitable that had been tested adequately could be identified. Once the wording was changed and visual analogue scales introduced, there were fewer problems although this did remain the one questionnaire that elicited more demand for explanation and took more time to administer. It was included to gain an understanding of patient awareness of pain control and was seen as an important aspect of the study.

4.3.2 Data collection

The Medical Practitioner identified suitable subjects suffering from an episode of ALBP who attended the clinic from February 2005 to August 2006. Those agreeing to participate were given an appointment card and asked to attend on one of the mornings that the researcher attended the clinic (Tuesday and Wednesday).

The appointment card was used to give the appointment more weight – rather than give the subject a verbal appointment, which may also be forgotten, and to try to differentiate the appointment from a normal clinic appointment. If the subject had a perception that the appointment had a special significance they may have been more likely to keep it. It was also physical evidence for an employer that such an appointment did in fact exist. The card was designed to try to convey a professional image to the proceedings in keeping with the subject matter of the study. It was thought if the subjects perceived they were participating in a medical study it might again have a special meaning for them and increase attendance compliance. It had a simple, but clearly labelled anatomical picture of the lumber spine in one corner, and a picture of one of the community residents who had participated in the Pilot Study on another (Appendix 7.3.3). This picture was included to try to re-enforce communication with the subject that the study was related to their environment in an effort to encourage them to keep the appointment. Other information on the appointment card included a telephone number where the researcher could be connected if the subject were not able to attend the appointment to minimise loss of subjects to other appointments that may have arisen in the interim and give the subject an opportunity to re-schedule. A place for a specific appointment time was also included.

Once with the researcher the subjects were read a short explanation of the procedure (Appendix 7.3.1) and if they were willing to participate they were asked to sign the relevant consent forms.

Subjects were then weighed and measured for analysis of Body Mass Index.

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The questionnaires were then administered. The order in which the questionnaires were presented was determined in the pilot study. It was felt that to facilitate the procedure, the shorter and arguably simpler scales and questions would be presented first to build the confidence of the subject. In the pilot study the MHLC was the questionnaire that seemed to require more thought from the subject and the one that usually elicited queries if there were to be any. It was decided to place this last in an effort to achieve maximum co-operation from the subject. If a subject was presented with a question that he/she found difficult to answer early on in the session perhaps they may loose enthusiasm for the procedure and as a result would loose concentration and perhaps give less representative answers. The pVAS, EQ5D, SHD, SCD and MHLC all had visual scales that were given to the subject in turn on laminated sheets (Appendices: 7.3.6; 7.3.7; 7.3.10; 7.3.12; 7.3.14). The range of possible answers was demonstrated verbally and indicated physically on the scale by the examiner. The subjects were then able to hold the scale and regard it while the questions were being asked and could respond verbally and/or physically by indicating their answer on the scale. As has been mentioned earlier on, this approach was decided on in the pilot study when it was found that subjects responded better to visual aids rather than just questioning.

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The order of presentation of the measurement instruments was as follows:

i. Pain visual analogue scale
ii. The EQ-5D
iii. Roland Morris Disability Questionnaire
iv. Stanford Health Distress Questionnaire
v. The Multidimensional Health Locus of Control Scale

Subjects were randomly assigned to one of two groups as described. The control group received an envelope in which there was the information leaflet currently being used by the clinic for patients suffering from an acute episode of LBP and the intervention group received an identical envelope with the newly designed questionnaire.

The subjects were asked to take the relevant envelope and to read it. They were told that it contained "information that might be useful to them in dealing with their LBP". An appointment was then made for them to return in four weeks time.

When the subjects returned four weeks later, the same 5 measurement instruments were re-administered in the same order and following the procedure as before. There were additional questions asked and participants were given R50 in appreciation of their time and to cover transport costs.

All subjects were asked for a contact telephone number on their first interview, if there was a telephone number available, any subject who did not attend the appointment of their second interview was contacted to arrange another appointment.

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4.4 Ethical Considerations

There were no apparent risks to the participants of this study. The subjects' inclusion in the study was anonymous as were their responses. They could withdraw from the study at any time with no repercussion. The study did not interfere with the normal treatment they would have had, it took up a relatively short period of time, and most subjects seemed pleased to be able to participate in a project that may help other people. This is perhaps reflected in the high percentage of subjects who did return for the second interview.

One benefit of the study may be that by attending the interviews and being asked questions about self-management of LBP subjects would think a little about their LBP and its management in a way that they had not before and would as a result be more aware of their own role in its management. As many of the subjects were obviously at risk due to poor life-style choices, health promotion pamphlets were given to those who might benefit – i.e. to those who smoked, were obese, complained of stress and did not exercise.

4.5 Data Analysis

Comparison of numerical demographic data was done through the independent t-test. The results of the tests were not regarded as parametric data as the scales were not numerical and did not measure cardinal values.

The *Wilcoxon sign test* (ordinal) and the *Dependent t- test* (numeric) were used to compare the scores at baseline and after four weeks. Similarly, depending on the type of data, either the *Mann-Whitney U test* (ordinal) or *Independent t-test* was used to determine if there was a significant difference between the two experimental groups with regard to the outcome variables. The responses to the open-ended questionnaire, which allowed subjects to give feedback on the value of the instructions, were post-coded and analysed descriptively.

The Body mass index ***(BMI)*** was calculated according to the following formula (Centre for Disease Control http://www.cdc.gov/nchs/)

BMI= Weight in Kilograms/(Height in Meters X Height in Meters).

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4.6 Results

4.6.1 Demographic description of the subjects

In the final study, 83 subjects were interviewed initially of which 42 were in the control group and 41 in the experimental group. Sixty-six subjects returned for a follow up, 34 in the control group and 32 in the experimental group. There was therefore no differential dropout of subjects. Three people who did not come to their scheduled second interview were contacted by telephone and came back. One person did not come to the second interview because of illness, and one person cancelled the appointment as they had a conflicting appointment. The remaining 15 who did not return, either did not have a telephone, or could not be contacted with the number they had given. At baseline the VAS of those who completed the study was not significantly different from those who did (p=. 97).

Gender: Fifty-nine subjects were *female* and 24 *male*. *Ages* varied from 19-76 with an average age of 46.6 years (SD 14.8). There were equal numbers of males and females in both groups. (Chi-sq=1.078, p=.299)

Age: The mean age of the control group was 46.0 years (SD=16.1) and that of the experimental group was 46.24 (SD=13.5). These were not significantly different (t=-.380, p=. 705).

The *Average* ***BMI*** was 31.1 a figure that falls in the obese category set by the Centre for Disease Control (Centre for Disease Control http://www.cdc.gov/nchs/) in Table 3. Only 17 people fell into a *normal* category and 60 people were over this ideal weight (Table 6).

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Table 6: Weight Categories (n=83)

	BMI
Obese: Over 30 kg	36
Overweight 25-30kg	24
Ideal 18-25kg	17
Underweight <18kg	2
Total	79
Missing	4

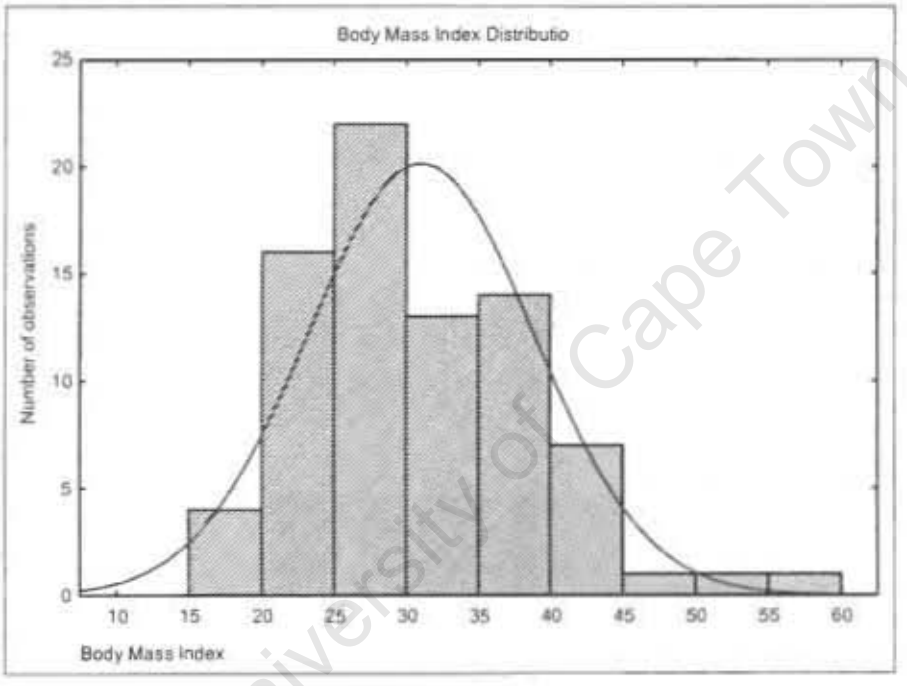

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Figure 1: Distribution of Body Mass Index Scores.

There was no association with obesity (a BMI over 30) and group membership ((Chi-Sq = .628, p=.428).

Smoking: More than half the subjects (67%) were smokers or had previously been smokers (Table 7). There was no difference in smoking habits between the control and experimental groups (Chi-sq=3.80, p=. 283).

Table 9: Occupational Categories (n=83)

	Control	Experimental	Total
Manual	20	21	41
Service sector	13	13	26
Pension	8	4	12
Disbility Grant	1	1	2
Unemployed	0	2	2
Totals	42	41	83

The distribution of general occupation categories was similar between the two groups (Chi Sq=3.34, p=. 50).

Other *health problems* identified were varied and the most common groups were hypertension (14), musculo-skeletal problems (apart from LBP) (9), asthma (6) and four with diabetes. Seventy seven percent of the sample (nine in the control group and fourteen in the experimental group) did not believe that they had had a serious illness in their lives. This is a high percentage and indicates that some of the subjects of the 40% who mentioned they had other health problems and a high proportion of subjects who listed back pain as being a problem (80% had had previous treatment for LBP) did not consider these as serious illness.

Table 10: Previous Serious Illness (n=83)

	Count	Percent
No	64	77%
Yes	19	23%

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4.6.2 Demographics of LBP: recurrence, previous treatment, causes of pain.

Regarding the *recurrence of low back pain* – 58 people had had at least one episode of back pain previously, while 12 subjects had come experiencing back pain for the first time. In effect then, this sample consisted of a small percentage of subjects who were experiencing LBP for the first time. Most subjects who had had *previous LBP* fell into one of three categories: those who had had pain on and off for 1-5 years (17), those who had had pain for 5-10 years (15) and those who had had pain for 10 years or more (28). 72% of subjects had had previous LBP. There was no association between recurrence and group (Chi Sq=2.53, p=. 111).

Of the 66 subjects who said that they had had *previous treatment, 55* of those had been treated solely with medication, seven had had medication and some sessions of physiotherapy and one had had reported medication and surgery (Table 11).

Table 11: Previous Treatment (n=83, multiple responses)

	Count	Percent
Medication	55	66
Nil - 1st episode	10	12
Nil	8	10
Medication/Physiotherapy	7	8
Traction	2	2
Medication/Surgery	1	1
Traction/Hydro/Physio	1	1
Missing	14	5

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Perceived causes of current LBP – Thirty-one percent of subjects identified a lifting related activity with 85% of those saying their pain was related to a work lifting activity (Table 12). Twenty-two (27%) were not able to identify a cause and unfortunately 17% of this data was missing as the questionnaire was revised after the first interviews and this was a question that was initially excluded. It was included to try to provide a better insight as to possible causes of LBP. The other miscellaneous category consisted of 9 different causes: stress, slipped disc, weather, arthritis, standing, MVA, wet working clothes, heavy breasts and bending. The full list is presented in Appendix 7.3.17.

4.6.3 Demographics of the control and experimental groups

The results from the preceding sections indicate that the control and experimental group were similar with regard to gender distribution, age, education level, occupational category and ACLB history.

4.6.4 Demographic Gender Differences – age, BMI, occupation

The average age of the male subjects was slightly higher than the average of the women, but not significantly so (p=0.52). The mean *BMI* for women was higher than the mean BMI for men. The mean BMI for women lay in the obese category (32) while that for men did not (28.8). However this difference was not significant (p=0.10) as seen in Figure 3. This is possibly because the mean BMI for men was close to the obese category. The distribution of males and females who received the different Information Sheets was not significantly different (p=. 23). Similarly there was no significant difference in the mean ages of the two groups (p=. 70). The difference in mean ages (p=. 42) of those subjects who did not return to complete the study were not significantly different from those who did complete it.

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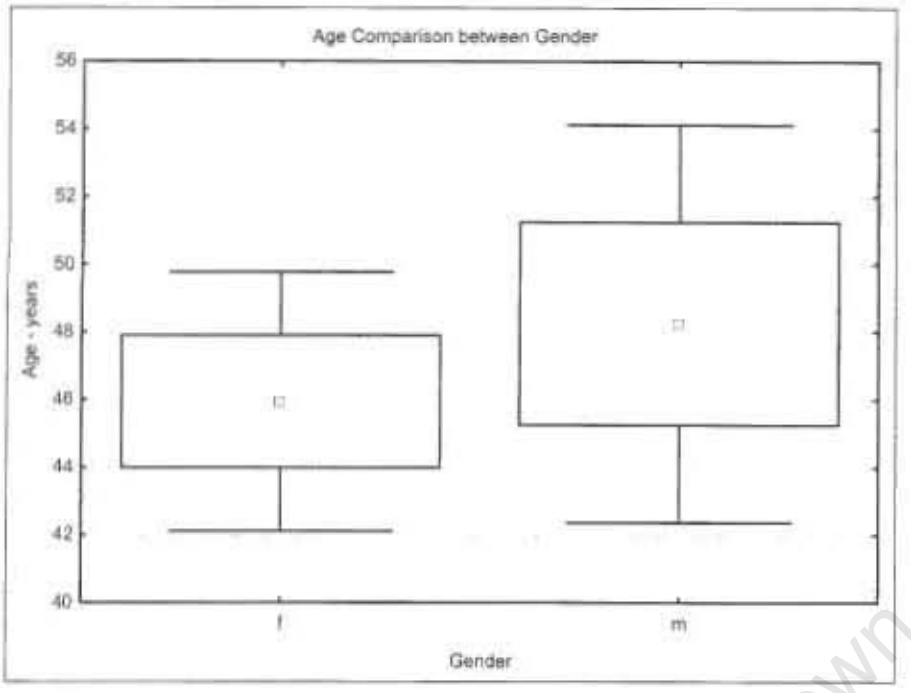

Figure 2: Comparison of Gender and Age (n=83)

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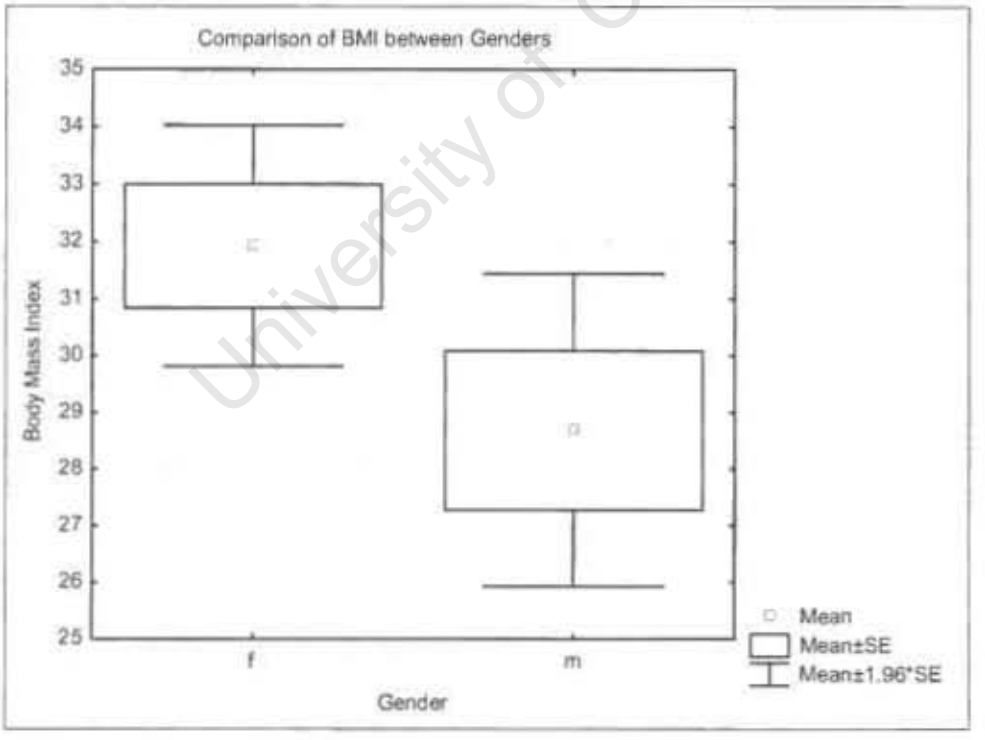

Figure 3: Gender and BMI (n=83)

In both men and women, the most common form of *occupation* involved manual activities that involved lifting (62.5%) with 41% of the sample accounting for women and 22% for men. The next highest occupational group, also for both genders was retirement, 14.46% (18.01% including retirement with a disability pension). Of this 11% were retired women and 3.6% retired men (Table 12).

Table 12: Occupation and Gender (n=83)

	Females	Males	TOTAL
Service and Sales Workers	33	2	35
Pensioner	10	4	14
Homemaker	4	0	4
Unemployed	3	0	3
Elementary Occupations	3	9	12
Clerk	3	1	4
Disability Grant	2	2	4
Crafts and Related Trades	1	6	7
Total	59	24	83

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4.6.5 Changes in Health, Pain, Function, Health Distress, Self-Efficacy and Locus of Control after Four weeks.

Pain: The level of pain subjects reported decreased over four weeks – the mean pVAS decreased from 6.68 to 4.72 (Table 13). Using a t-test for dependent samples this change in level of pain was significant over time ($p > .05$).

Table 13: VASpain Scores at baseline and after 4 weeks

		Mean	Std. Dev.
VAS baseline	N=81	6.68	2.27
VAS after 4 weeks	N=65	4.72	2.90

VAS Health: Subjects perceived their health to be better four weeks after their first visit to the Doctor with an episode of LBP. The means of the EQ-5D VAS scale on health showed an increase over time from 63 (SD=21) to 69 (SD=20). A higher score indicates that a subject perceived his/her health on that day to be better. This change was significant with p=0.04.

EQ5D Health Perception (same, better, worse) 41% of subjects felt their health on the day of the 1st interview was the same as in the previous year, 19% felt it was better and 39% worse. After a four-week interval, 38% felt their health was the same, a decrease of 3% from, 33% felt it was better (an increase of 14%) and 29% felt worse (a decrease of 10%).

Function: The mean of the RDQ scores on the first interview was 15.9 (SD 4.9), this mean score decreased over time to 13.2 (SD 6.1) indicating an improvement in mean functional score after four weeks (p<. 05). With the change in RDQ Scores over time 47% improved function. Seven per cent of subjects scored a decrease of 10 points or more. 10% of subjects did not show any change in their scores and 13% of subjects increased their scores – a decrease in function over time. The range of change shown was from a decrease of 20 to an increase of 14. A change in score from between the ranges of 6 points to 0 points was the most common with 55% of subjects falling in these categories.

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The ***EQ5D*** measurements of ***mobility, self-care, usual activities, pain and discomfort and anxiety and depression*** at baseline were as follows: 42 % of subjects reported a normal level of *mobility* (no problems), 20% had no problems with *self care,* 54% no problems with *usual activities. Pain and discomfort at* baseline was much lower with only 4% of subjects reporting– "no pain and discomfort", the level of *anxiety and depression* was 21%. The middle score for all 5 categories was the most commonly scored (Table 14).

The EQ5D dimensions showed a significant change between visits with all categories except for the measurement of a*nxiety and depression.* Subjects had made a significant improvement in mobility, usual activities, self-care and pain. It appears that while function may improve over a short period of time, a higher percentage of subjects remained feeling anxious and depressed about their pain.

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Table 14: EQ5D scores over time (n=66)

		1st Interview	After 4 Wks
Mobility:	No problems	35	42
	Some problems	47	24
	Confined to bed	1	0
Usual Activities:	No problems	17	28
	Some problems	64	38
	Unable to perform	2	0
Self Care:	No problems	45	48
	Some problems	37	18
	Unable to wash/dress self	1	0
Pain and Discomfort:	None	7	11
	Moderate	49	43
	Extreme	31	12
Anxiety/Depression:	None	17	20
	Moderate	36	25
	Extreme	30	20

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Table 15: Baseline figures for self-efficacy values (n=83)

Baseline	Valid N	Mean	Min	Max	Std.Dev
Manage without Doctor	82	4.8	0	10	2.8
Manage work	55	5.3	0	10	3.1
Manage home	83	4.9	0	10	2.8
Manage without medication	83	4.1	0	10	3.2

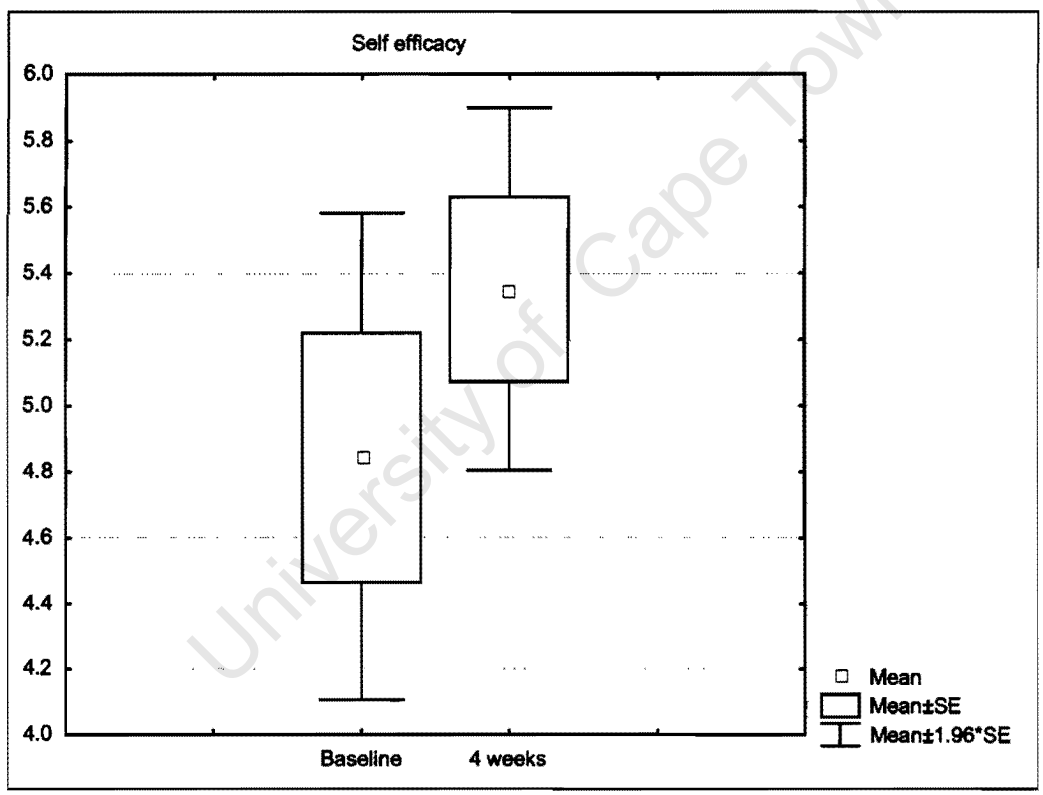

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Figure 4: Box plot comparisons of Self-Efficacy at baseline and after 4 weeks

The difference in means of the *total* self-efficacy scores was not significant using a t-test for dependent samples. The only significant change in the *individual* self-efficacy scores over time was pain management, which showed a significant change at P<0.05. At the second visit subjects scored higher on the topic of managing their pain without medication. There was not a significant change in how the subjects felt about the need to see the doctor, managing their work, home activities, and doing gentle exercise without making the pain worse.

Health Distress: With the Stanford Health Distress scores the mean of the first test was 12.5 (SD4.88). Possible score range for each subject was between 0 and 20, where 20 indicates the worst level of distress. Health distress decreased to 11.69 (SD5.7) over time – this difference was not shown to be significant (p0.05) - i.e. there was no significant change in the way subjects perceived their pain with levels of discouragement, worry, frustration and fear of future pain.

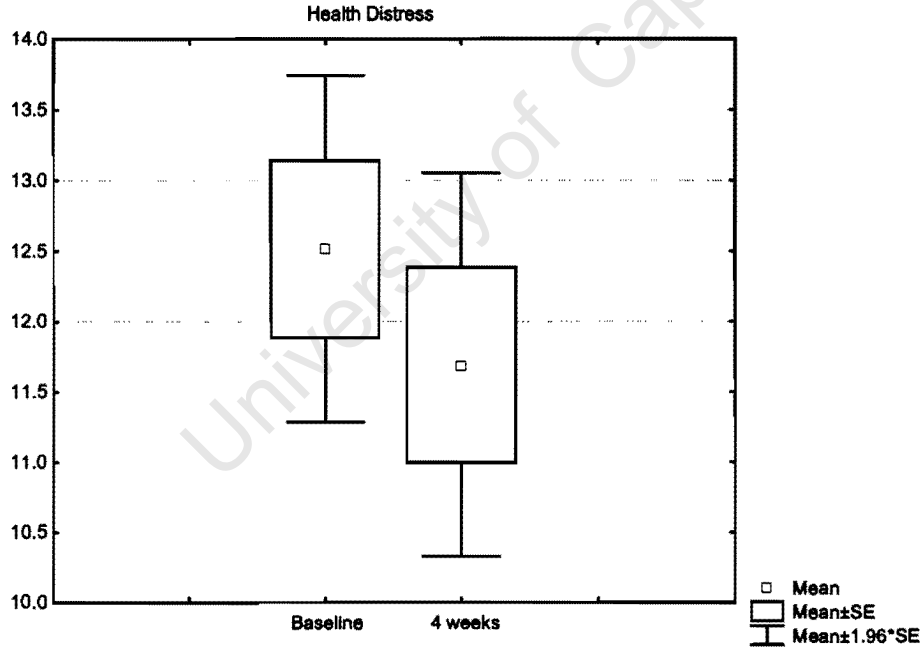

Figure 5: Box plot of Health Distress at baseline and after 4 weeks

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Locus of Control: The range of scoring of MHLC falls between 6 and 36 with a mid-point of 21. A mean near 6 would indicate a belief of low control of the item being investigated; a mean nearer 36 would indicate a belief of higher control.

The mean scores representing individual's beliefs about how much they felt they themselves could control their LBP (Internal Control) were just above the mid-point of 22 indicating a slightly greater than average belief that they could control their own pain. The average score for the effect of chance on LBP was also 22 – indicating slightly more than average belief if the effect of chance in the control of LBP. Over a period of 4 weeks the mean for internal control did not change, while the mean of the importance of chance increased slightly.

Where the power of others was concerned, the average score of the belief in the power of others was 28, indicating a higher belief by those suffering with LBP in this community in the power of others regarding the control of LBP, than himself or herself or chance. This belief of the power of others difference decreased significantly over time. (p=0.2).

The ranking of the other scores did not change over time – at the second interview subjects still indicated that others had more control over their pain than either they or chance did.

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Table 16: MHLC values baseline and after 4 weeks

		N	Mean	Min	Max	Std.Dev.
Internal Control	Baseline	83	22	9	35	5
Power of Chance	Baseline	79	22	7	36	7
Power of Others	Baseline	82	28	15	36	5
Internal Control	4 week f/up	67	22	11	30	5
Power of Chance	4 week f/up	61	23	6	65	9
Power of Others	4 week f/up	67	26	12	42	6

Table 17: Significance of change in MHLC after 4 weeks

Significance of Changes in MHLC scores over 4 weeks:	p
Internal Control	0.67
Power of Chance	0.91
Power of Others	0.02

In summary, the RMQ and all of the EQ-5D domains showed improvement, with the exception of Anxiety and Depression. This would indicate that they are sensitive instruments to change and likely to be valid in this population. The only domain of the Stanford Confidence or Health Distress to show improvement, was that concerning the management of medication and in the category of control, the power of others to influence pain decreased over the four weeks.

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4.6.6. Comparison between changes in scores over 4 weeks between the control and the experimental group.

Table 18: Comparison of the difference in scores between baseline and four week assessment on the different scales

	Control Group			Experimental Group		
	Mean	N	Std.Dev.	Mean	N	Std.Dev
Pain VAS	4.73	33	15.81	2.28	32	3.09
HRQoL VAS	11.00	33	29.60	4.45	31	28.61
Internal Control	-0.79	34	4.92	0.06	32	5.29
Power of chance	-0.57	30	5.91	1.00	29	9.96
Power of others	-1.91	34	5.46	-1.59	32	5.98
Roland Morris	9.71	34	9.36	12.24	32	9.67
Health Distress	0.38	34	5.16	0.79	32	5.48

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As the data were regarded as non-parametric the Mann-Whitney U test was used to assess the difference in VAS HRQoL, RDQ, SHD, SSES and MHLC between those subjects receiving the normal pamphlet of information and those receiving the brochure created according to need and lifestyle for this community. Table 19 summarises the result of comparisons between the two groups.

Table 19: Comparison of reported change in health status after 4 weeks between the two groups

Health Status	Control	Experimental	Total
Worse	11	8	19
Same	10	14	24
Better	12	8	20
Totals	33	30	63

Chi-sq=1.80p=.406

Table 20: Comparison of the changes in score between the two groups receiving the new and the existing information (Control =34, Experimental = 32)

	Rank Sum Original leaflet	Rank Sum Test leaflet	U	Z	p level (Mann-W U)
VAS Pain	1088	1057	527	-0.013	0.99
VAS HRQoL	1045	971	475	0.29	0.77
Roland Morris	1361	1268	638	0.11	0.91
Health Distress	1255	1092	531	0.58	0.56
MHLC Internal Control	1094	1184	499	-0.78	0.44
MHLC Chance	855	915	390	-0.68	0.50
MHLC Power	1170	1042	514	0.39	0.70

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In none of the measurements were there any significant differences detected between subjects receiving the original leaflet of information on LBP and those receiving the test leaflet, which had been tailor-made to their lifestyle and needs.

4.6.7 Use of Information Leaflets

Approximately 90% of subjects in each group reported reading the leaflet. Two subjects did not read the leaflet and two subjects lost it. Of those who had read it, 75% in each group reported that they had been able to understand the contents. Four could not remember any specific information about it to comment on its content, one person said the content had not been clear, two said they were too tired at the end of a busy day to concentrate on it. One subject had no comment as he felt his back was too bad to help and another subject said he knew how to manage his back from previous advice he had been given and that this information was not new or helpful to him. Another subject told the interviewer that she had been too scared of hurting her back to do the exercise on the leaflet she had been given. Requests for more information included: a request for an X-ray, advice about how to do a specific job, more advice about exercise, explanation about the cause of the LBP. A subject who claimed to be addicted to tablets to help her LBP wanted to know how she could manage her problem without medication.

Eighty-two percent of patients said the leaflet (either one) was useful and 18% either that it was not useful, they had not read it or could not remember. When asked what was useful about the leaflet, of those that had found it useful, 27% specified the advice on posture, 17% lifting and/or bending, 23% exercise. Eighty-five percent of those subjects that returned had read the leaflet and 65% claimed to have understood it.

When asked what other information they thought would have been useful to include in the leaflet, or information that they might have wanted to know about to help their pain – 31 (47%) did not have any suggestions/said no more information was required.

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In the subjects' comments, it was noted that many asked to know what the cause of their pain was – this is in line with other findings (Burton, Kim A, Waddell et al. 1999) that patients go to doctors for information. Only one subject who had the new leaflet and who said she had read and understood it still asked for an X-Ray, two others who had the new leaflet asked for explanations of the cause of their pain despite having claimed to have read and understood the leaflet. Thirty people could not think of other information they would have liked included, three requested more information – two or exercise and one on what to do especially in the morning when his pain was worse. Three subjects reported having lost the leaflet. Four said they could not remember information from it.

Positive comments included that the leaflet was helpful and good; that relatives had been encouraged to read it, the leaflet was in a safe place and that it had not been thrown away. Other positive feedback included that the leaflet had made subjects more careful with their backs.

There was no association found between any of the above responses and the information pamphlet group.

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4.7 Discussion

The new leaflet was tested in a randomised control trial. It did not appear to have a superior impact on the outcome measures chosen compared to the standardised sheet produced by a pharmaceutical company. The participants demonstrated a significant decrease in impairment and functional limitations over the course of the study, but there were no significant change in levels of anxiety or levels of discouragement, worry, frustration and fear of future pain.

4.7.1 Effects of new information leaflet

This study did not demonstrate any difference in levels of pain, self-efficacy, heath distress or locus of control between subjects who received the two different information leaflets. There may be several reasons for this. The study, as mentioned above was underpowered, however if one examines the results of the Mann Whitney U tests (Table 20) it is clear that the p values are high and do not approach significance. It is unlikely that a larger sample size would have lead to difference being detected. It would appear that the content of an information leaflet, however appropriate, does not result in a change in outcome.

The provision of Information Leaflets on nutrition, dealing with stress, smoking and exercise, to all those who report risk behaviours might have resulted in change, but as the information was not targeted at the management of the LBP; it is unlikely that these leaflets would have confounded the results of the intervention study. It was also held to be ethically necessary to leave the participants with some material that might impact on their life-style choices as they have limited access to health care.

Unfortunately there was no group in the current study that did not receive any health information, in other words there was no true control group but rather a comparator group. It would have been interesting to see if subjects receiving no information had different results in function, pain etc. It seems that this community did not benefit from information specifically targeted to their needs. This could be for different reasons. There is some evidence that the written word is not the best medium for people with lower levels of literacy. While all subjects said they could read and understand English this may not have necessarily been true, perhaps subjects may have been embarrassed to say they did not read/understand English. Readability of English could have been compromised by different factors. As has been mentioned; for many of the subjects English is second language with Afrikaans being the primary language which might have affected understanding. The number of years of education could have affected readability, as could such things as poor eyesight with many of the older subjects being diabetic and wearing glasses.

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The financial stress that was indicated to be a problem in this resource poor community might have prevented people from reading, absorbing, taking note of, remembering and implementing advice from an information leaflet, despite subjects indicating that they felt their LBP was the most stressful thing in their lives. This may have important implications for management of LBP in such resource poor communities. "A low degree of education and high physical job stress are independent predictors for low back disability" was an interesting point made in a study on emotional distress and disability from LBP (Brage, Sandanger et al. 2007). Educational level has also been linked as a potential predictor of outcome of treatment of LBP (Jellema J. 2006).

In 2002 a study was published that investigated the impact of a leaflet for LBP designed specifically according to need – the Back Home Trial (Roberts, Little et al. 2002). In this study regarding the parameters of knowledge, improvement in knowledge was significant at two weeks after the leaflet was given to the subjects. There was no significant difference in subjects' *attitudes* regarding their ability to manage their LBP on their own, or with *function*. There was however a significant change in *observable behaviours* of good posture and lifting technique. In the Back Home Trial there were three stages involved:

1. Finding out the needs of subjects regarding their LBP – firstly subjects were asked to list things they would like advice on in connection with their LBP.
2. The second stage other subjects experiencing recent LBP were asked to rate these topics in order of preference, the topics were also given to subjects who had been experiencing LBP for several weeks, and senior physiotherapists.
3. Once the leaflets were produced, patients attending a back school evaluated them.

In the current study, there was only one stage; subjects were asked questions about whether they would like information on specific topics that were based on the questions of the Back Home Trial. The information that was most often requested was included and in the current study all topics included had positive responses of over 80% for each response. This was perhaps prompting the subjects to identify specific subjects of need rather than getting them to come up with their own needs which may have been different.

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The BACK Home study can be seen to have tested a more in-depth review of need as it reviewed subjects at earlier and more frequent time intervals. However while an improvement in knowledge of LBP was indicated this was only significant at two weeks after the intervention. The current study did not measure specific knowledge change and this may have been an oversight, subjects were asked general questions. It might have been more useful to have structured questions. Improvements in observable behaviour such as posture were significant up to three months after the intervention in the BACK Home Trial. It is interesting to note that the Back Home Trial did not investigate health distress and control, which are possibly important aspects of patient care to consider.

Regarding the pain – the subjects of the BACK Home Trial were experiencing an acute *episode* of LBP but there was no exclusion of subjects who had had LBP previously unless they had had it within the previous six months. It could therefore have included subjects who had had previous episodes of pain prior to the six-month period who would have been considered by definition to be suffering from CLBP.

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4.7.2 Changes in Health, Pain, Function, Self-Efficacy, Health Distress and Locus of Control after 4 weeks

Significant improvement was found in subjects' perception of their health after four weeks. Pain also reduced significantly after four weeks and function improved significantly during this time period. There was no significant change in levels of anxiety and depression, and subjects did not feel more confident about visiting the doctor less, performing their activities at work and home, or doing exercise. With health distress, there was no significant change regarding levels of discouragement, worry, frustration and fear of future pain.

Eighty-four percent of the subjects in this study were suffering by definition from CLBP and despite improvement in physical function there was no change in psychological function. These findings are in line with other studies (Cherkin, Deyo et al. 1996; Roberts, Little et al. 2002). It may be useful to redo the study with more specific classifications of the type of pain being experienced. Chronic as described by the Oxford Dictionary when relating to an illness means: persisting for a long time or having a persistent illness. Persistent is described as: continuing or recurring (Oxford Dictionary 2007).

A high percentage of people seeking care for LBP in this study were not experiencing pain for the first time. Seventy two percent had had previous pain, and of these 34% had experienced their first episode of pain more than 10 years previously. Not all studies that have investigated the effects of leaflets have clearly demarcated episodes of ALBP and CLBP. The eligibility of subjects suffering with *acute* or *chronic* LBP was varied; for one study was simply "back-pain", "low back pain", "hip pain" or "sciatica" (Cherkin, Deyo et al. 1996) another "acute or recurrent non-specific low back pain.....duration of pain less than 3 months" (Burton, Kim A, Waddell et al. 1999), in the Back Home Trial "back pain severe enough to warrant at least 3 days off work with no low back pain in the previous 6 months" (Roberts, Little et al. 2002). Another randomised trial of an educational booklet was less specific about previous back pain – stating that the subjects came to the doctor for a *new episode* of LBP (Burton, Kim A, Waddell et al. 1999) while another study excluded patients with "stable, chronic back pain" (Little, Roberts et al. 2001). This present study did not make specific exclusions of sufferers of CLBP.

In one study, 615 subjects in Holland with an episode of ALBP were assessed by postal questionnaire six weeks and six months after their initial visit to the doctor. Parameters of pain, pain-related fear, function and participation were explored and results indicated fear of movement to be the strongest predictor for disability (Swinkels-Meewisse I.E.J. 2006). Apparently, re-assurance and advice, which form part of recommendations for management of LBP in different countries such as New Zealand (NZACC. NZALBPG. 2003), are not necessarily enough to decrease reporting of increased levels of pain related fear (Swinkels-Meewisse I.E.J. 2006).

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Lorimer Mosley conducted a study in which his subjects received specific education about the lumbar spine. His educational intervention was focused on subjects with CLBP – the subjects had to have had a history of LBP pain for more than four months – the accepted classification of CLBP as was previously noted is three months. What was not clear however was what the precise pattern or history of pain was during those four months – continuous daily pain/one episode of pain – different options could have been selected. When subjects were exposed to information that changed the way they perceived LBP, it appears that certain parameters of their physical movement improved and this may be valuable in the treatment of sufferers of CLBP (Lorimer Moseley 2004). More subjects had CLBP in this study than ALBP and information that could potentially change behaviour would be useful.

It is important to remember research indicates that a high percentage of sufferers of ALBP may go on to have more episodes of LBP and that sufferers of CLBP are more difficult to treat. With regard to information, there may be a place for two different types of brochures – one for first-time sufferers of ALBP to try to minimise the possibility of recurrence if this is in fact possible, and another to target sufferers of CLBP to try to influence, amongst other factors, their levels of distress about their LBP. It could be that the lack of response to this leaflet was due to the fact that these different sub-groups of LBP existed within the main group.

It has been mentioned that suggestions for management of LBP may be more appropriate if LBP were sub-grouped into different causes (Kent and Keating 2004). Another approach would be to sub-group with regard to number of episodes, time factors and intensity of LBP as well as mechanism of onset of pain. As the causes of back pain are so diverse, it may not be possible to affect any type of improvement with a generalised treatment such as a non-specific educational program without knowing more about a patient than if they have ALBP or CLBP. The results of this study containing a mixture of subjects with acute and chronic pain perhaps highlights this problem.

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Self-efficacy did not improve over time. This is perhaps not surprising. Bandura's theory of Self-efficacy or "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (Pajares F. 2004) is attributed to highlight the process of human motivation – in other words - unless people believe their actions can have some effect they have little incentive to carry them out. An educational leaflet provided in isolation will not necessarily be able to address such a complex aspect of human behaviour and reasoning. Lorig has demonstrated that education together with goal setting is important to change self-efficacy (Lorig and Holman 1993; Lorig, Mazonson et al. 1993; Lorig 1995; Lorig and Holman 2003; Kent and Keating 2004).

Rotter provided his theory concerning locus of control (Mearns J. 2004) which refers to belief about the outcomes of our behaviour – a person can have an *internal locus of control* and believe that ultimately he/she is responsible for the outcomes of his/her behaviour or an *external locus of control* – a belief that someone or something else is responsible for the outcomes of his/her behaviour. In this study the scores pertaining to subjects perception of the effect their own behaviour on LBP (internal control) and the power of chance on their LBP (one aspect of external control) did not change significantly over time – in other words the degree to which subjects rated internal control and chance important did not change – however the degree to which they perceived the power of the doctor with regard to their LBP did change – this power decreased over time. It may be that this change is due to participants' belief that the doctor's intervention was not helpful which therefore decreased the subjects' perception of the importance of the doctor.

There was no difference over time between the two leaflets with regard to internal control, chance or the power of the doctor over LBP. A leaflet alone, even it includes information in line with the expressed needs of the participants concerned is therefore not able to address issues regarding the beliefs these subjects about the control they, chance or the doctor have over their pain. These internal risk factors for LBP might respond better to other forms of intervention, but a leaflet in itself is not sufficient to bring about change.

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Patients may respond better to health information when it is discussed with them. This could be followed up in another study. However, in one trial that tested three different parameters with regard to treatment of LBP: usual care for LBP, usual care plus a booklet, usual care with a booklet and an educational session with a nurse, indicated that subjects seemed to understand their back problem better with the latter of the three interventions but "perception of symptoms, worry and sense of control" were not affected. Again, how subjects "felt" about their LBP remained a problem. The participants in this study were well educated (Cherkin D. 1996).

It may be useful to run another study to see if the *behaviour* of subject's with LBP is changed in any way after the implementation of a leaflet such as the one used in this study. There are a number of ways that this could be done such as asking subjects about how they perform certain activities before and after implementation of the leaflet or watching them perform certain test activities for example. However, this is a difficult area to test as behaviour in a test situation such as has been described may not relate to actual behaviour in the home or work environment.

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4.7.3 Study Limitations

Sample

There were several limitations of the study, which limit its relevance to different populations and would need to be addressed in future research. The sample under study was not representative of all people in this community with LBP, just those seeking healthcare at this clinic. There may be others who seek help elsewhere and those who do not seek healthcare for their LBP. These results therefore can only be applied to people from resource poor communities who attend local health clinics for help with their LBP. This limits the external validity of the findings and future research could target a wider range of respondents. However as discussed in the literature review, the drain on public health resources due to LBP is of concern and the results are of interest to the public sector.

Intervention

There was no control group of subjects receiving no information leaflet to see if receiving information was better than not. This means the study was unable to evaluate whether the distribution of a pamphlet within a clinical setting has any benefit whatsoever, regardless of content. It is suggested that in future studies, it would be advisable to test any information leaflet against a control of no leaflet to see how much, if any difference can be observed.

As in many rehabilitation studies, the sample size was inadequate to pick up small differences that might occur due to intervention. This was because of the large standard deviation and the small amount of change that could be attributed to the different information sheet. In addition, despite all efforts made to contact participants, there was an attrition rate of 20%, which further decreased the sample. A high attrition rate is a characteristic of studies done in highly mobile populations who do not have access to fixed telephone numbers (Jelsma, J., Mielke et al. 2002). There was no reason to believe this group was different to the other participants (the Mann-Whitney U test showed no significant difference between the VAS score of those who did not attend and those who did, p=. 6).

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Instrumentation

As was mentioned before, the MHLC specified for LBP was modified after a pilot study and the modifications helped, however they were not sufficient and further attention to specific words/wording for this community is needed. Often subjects asked for clarification of the words luck, fate and good fortune. Selection of a better choice of words in some questions may be more appropriate. The use of this questionnaire could be tested again with words and phrases that seemed to be a problem replaced to see if patients' response is facilitated.

The doctor in charge of the clinic has been the sole medical practitioner looking after the health care of people in the community for over 10 years, and is well liked and respected. Questions 15 and 16 about following the "doctor's orders" and only doing "what the doctor tells me" may have been influenced by this. This is positive from the point of view that a well-liked doctor could increase compliance levels in treatment but negative from the point of view that subjects may have indicated that they were satisfied with their treatment of LBP because they like the doctor rather than that they thought the treatment was good.

Many subjects did not have stairs or did not ever use stairs and this affected answers for two of the RDQ questions. It may have meant that a subject with stairs at home either inside the house or someone who lived in a block of flats, had a different score if they did find a problem with the stairs, than a person who did not have stairs but might have had a problem if they had had stairs. If used again perhaps it would be better to amend this particular question.

In the survey to determine need, subjects were asked pre-scripted questions about information they would like about LBP in order to gain information about the needs of the community. There may have been information/treatment that was different from what was asked. This could have been dealt with differently by asking questions in which the subject had more freedom to respond spontaneously, but it must be noted that subjects were not forthcoming with information when this option was exercised near the end of the interview on the second visit. This may not be related to actual need or but simply because the subjects are not used to someone asking their opinion and so may be inexperienced at communicating their need or they may not have thought about it or alternatively may have not thought it important. In future it is suggested that similar interviews be structured to enable subjects to think about and communicate need regarding a specific subject.

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Structured questions about the value of the questionnaire, rather than asking the subjects general open-ended questions might have been more useful – one study looking at an intervention into LBP management with leaflets (Little, Roberts et al. 2001) asked more detailed questions of the subjects at the end of the interview regarding specific content of the leaflet and gave them a test on their retained knowledge. It must be noted that this would not necessarily indicate that subjects implement this knowledge. The question of how to get people with LBP to change their behaviour remains. There have been studies done on behavioural change, one of these looked at a specific "cognitive-behavioural program for enhancing back pain self care in a primary care setting" (Moore, Von Korff et al. 2000). In this study the behaviour of subjects who received a large input of information on many levels about how to deal with their LBP did show a behaviour change – although there was no specific test of any change in subjects' knowledge about their LBP.

Patients with both acute and chronic episodes of LBP may have responded differently to the questions. It is possible that a person with a new episode of LBP has a different perspective on the pain and different expectations of recovery. Their psychological status regarding the pain would therefore be different.

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5. Conclusions and Recommendations

LBP is a problem experienced by members of this resource poor community and if the situation reflects other similar communities in South Africa, it is a consumer of scarce and vital health resources. A further study could be conducted to explore specific epidemiology of LBP and its inherent problems in these communities and the specific economic burden it represents.

LBP needs to be managed well, to improve the quality of life of those suffering with LBP and for the economy. The demographic and health related information that was gathered was useful in identifying the factors that needed to be targeted in the information booklet. It is hoped that this information will be useful for any therapist wishing to give appropriate advice regarding management of LBP to patients drawn from similar resource poor communities. A better knowledge of the occupation and expectations of patients will assist in planning appropriate interventions and the New Information sheet is likely to be a useful tool for therapists working in similar areas. A further study could be done to explore more specifically the epidemiology of LBP in South Africa as whole and different communities in particular.

However, an information sheet, distributed without specific advice and discussion, was found to be ineffective, regardless of whether tailor-made or not. Whereas the purely medical management received by these participants did decrease their pain and functional symptoms in the short term, four weeks later there were still high levels of distress present and subjects did not feel any more in control of the pain, or perceive themselves to be able to function better, need to take less drugs or see the doctor less. It may be helpful for future studies to investigate possible ways in which perception of control and function could be improved in this community of people seeking help for LBP as this might decrease levels of distress and decrease dependence on drugs and medical care.

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There are numerous other areas of research that could be considered. Over two thirds of subjects had had previous episodes of LBP and as has been noted successful management of those with ALBP may differ from that of those with CLBP. It may be useful to prescribe treatment shown to be successful in other countries for patients in each of these categories, the potential of which could be investigated in further studies. For example spinal mobilisations are recommended by some guidelines on the treatment of ALBP. Exercise classes have also been found helpful for those with CLBP. Neither of these treatments is easily accessible in this specific community.

It may also be relevant to consider testing the use of the leaflet under different conditions – it may have more impact if it is issued in conjunction with specific instructions for its use or together with personal recommendations. The impact of the leaflet on a person suffering with their first episode of ALBP may be different when compared to the impact it may have on a person seeking help with a repeat episode of ALBP or CLBP.

The case mix with regards to personal factors as well as onset, cause and duration of LBP should be taken into consideration in any further study as an intervention, such as the Information Leaflet, may be more effective in certain sub-groups of patients.

In conclusion, an information sheet on its own may not accelerate resolution of the pain and intervention of physiotherapists appears to be necessary, supplemented by appropriate information sheets.

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7. Appendices

7.1 Red Flags (used for both stages)

Cancer

Unexplained weight loss

Immunosuppression

Prolonged use of steroids

Intravenous drug use

Urinary tract infection

Pain that is increased or unrelieved by rest

Fever

Significant trauma related to age (e.g., fall from a height or motor vehicle accident in a young patient, minor fall or heavy lifting in a potentially osteoporotic or older patient or a person with possible osteoporosis)

Bladder or bowel incontinence

Urinary retention (with overflow incontinence)

Physical examination

Saddle anaesthesia

Loss of anal sphincter tone

Major motor weakness in lower extremities

Fever

Vertebral tenderness

Limited spinal range of motion

Neurologic findings persisting beyond one month

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7.2 Appendices Stage 1

7.2.1 Information Sheet

WHAT AM I TRYING TO DO?

I am a researchers from the University of Cape Town, part of a team interested in finding out more about back pain in Ocean View. The doctor asked you to come and see me because either you have back pain or you have been given an information sheet to help you manage your pain. I do not want to know which sheet you have been given but we want to see if there is any difference between the two information sheets

I would like to measure your weight and your height and then ask you questions about the sort of things that you do, e.g. working, looking after children and so on. I also want to know how bad your pain is and whether it makes a difference to you every day activities.

WHAT WILL YOU BE ASKED TO DO?

I will interview you and fill in a questionnaire. Each interview will take about 30 minutes. We know that this is a long time but we want to get as much information as possible so that we can better understand the problems that you face. We would like you to fill in this diary every day for the next two weeks. In it you will need to write down what part of the information sheet you used during the day and if you followed any of the advice that day on the information sheet.

WHAT WILL YOU GET IF YOU TAKE PART?

I would like to give R25.00 to assist with transport to the clinic. Otherwise there is no payment or reward for taking part in the study and there is no reason for you to take part unless you would like to help me understand the situation of people with back pain better. I will make all the information known (but of course not your name or address) to the local institutions that provide assistance to people with back pain. I hope that what I find might lead to changes being made, but I cannot promise this. In the short term there will be no direct benefit to you or your family.

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Nothing bad will happen to you if you do not want to take part. Even if you do take part, you can stop answering questions at any time and you can refuse to answer specific questions.

I can refer people who take part to whatever services they need which may be available in the area.

WILL PEOPLE KNOW WHAT ANSWERS YOU HAVE GIVEN?

All the answers will be put together and no-one will know who gave any specific answer except the researchers and maybe members of the Ethics Committee of the University of Cape Town (which is a committee that makes sure that people who take part in research are protected). Your name will not be given to anyone and will not be listed anywhere. The results of the project will be made available to local and government authorities and the scientific community but no names will be linked to any results.

Your participation is appreciated. Should you have any questions please contact Deborah Yates at .....

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7.2.2 Informed Consent

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School of Health & Rehabilitation Sciences

Divisions of Communication Sciences & Disorders · Nursing & Midwifery· Nutrition & Dietetics
Occupational Therapy · Physiotherapy

University of Cape Town

Dear participant

Please read the attached information sheet.

We hope that this research will help health professionals to better understand the back pain in Ocean View. All questionnaires are anonymous and records will be kept strictly confidential.

You are welcome to contact the Investigators, by phoning Jennifer Jelsma (021) 4066402 or 084-6116681, a lecturer in Physiotherapy at UCT for further details about the research and your rights. This research is voluntary and refusal to participate or decision to withdraw at any time will involve no penalty or loss of benefits to which you, the participant, are otherwise entitled.

I acknowledge that I have read and understand the above information and have willing chosen to participate in the study. I know that I can withdraw at any time and that I do not have to answer all of the questions if I do not want to.

_____ _____

Participant Date

I give permission for the researchers to phone my home if I do not come back to the clinic in four weeks.

_____ _____

Participant Date

_____ _____

Witness Date

7.2.3 Lifestyle Questionnaire

1) Age
2) Gender
3) Height
4) Weight
5) Marital Status
6) Number of years of School
7) Occupation
8) Do you live in a flat/house/informal dwelling/other
9) How far are the shops from your home
10) Monthly income of family
11) How many people does this support
12) Do you have any stairs at home inside and out
13) How many
14) How many hours a night do you sleep
15) What kind of surface do you sleep on: soft/hard
16) How many hours of physical activity outside work do you do a week
17) What kind of activity
18) Do you smoke
19) How many a day
20) Have you ever smoked
21) For how many years
22) When did you stop
23) Do you drink alcohol
24) What
25) How much a week
26) Do you take any nutritional supplements Yes/No
27) Do you do any work around the house?
    a) Vacuuming Yes/No
    b) Mopping Yes/No
    c) Sweeping Yes/No
    d) Scrubbing Yes/No
28) Do you make beds Yes/No
29) What kind of covers do your beds have
30) Do you do any work in the garden/yard Yes/No
31) What?
32) Do you lift heavy objects at home Yes/No
33) What?
34) Do you fix things around the house that in any way puts strain on your back Yes/No
35) Do you carry heavy loads
36) What?
37) Are you currently employed Yes/No
38) How long have you don't this job?
39) What work did you do before?

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40) How many hours do you work per day

41) How many days a week

42) How many days holiday do you have a year

43) Do you do shift work Yes/No

44) *Overtime Yes/No*

45) How much overtime do you do per week

46) How many days have you taken off in sick leave in the last year?

47) How do you get to work car/bus/taxi/walk

48) How long does it take

49) Does your work involve any of the following postures:

a. Twisting Yes/No
b. Bending Yes/No
c. Working in awkward postures Yes/No
d. Sitting for long hours Yes/No
e. Lifting heavy weights Yes/No

50) How many hours in a day would you be using these postures

51) In the last year have you:
a. Got married Yes/No
b. Divorced/end of a relationship Yes/No
c. Had financial problems Yes/No
d. Moved house Yes/No
e. Had problems with any of your children Yes/No

52) Do you sleep well at night Yes/No

53) Do you like your job Yes/No

54) Are you able to easily meet your expenses with your salary Yes/No

55) Are you the kind of person that talks about your problems Yes/No

56) Do you have any other health problems Yes/No

57) Do you feel you have a healthy diet Yes/No

58) What do you think is important for a healthy diet

59) What do you think causes back pain

60) Why do you think you have back pain

61) What is the best way to deal with back pain

62) Can a doctor help Yes/No

63) How?

64) Do you know what a Physiotherapist is Yes/No

65) Do you know what a Physiotherapist does Yes/No

66) What?

67) Could you die from back pain Yes/No

68) Does anyone in your family suffer from back pain Yes/No

69) Who?

70) Can back pain get better without help Yes/No

71) What is an X-ray

72) Is an X-ray important when you have back pain Yes/No

73) Do tablets help back pain Yes/No

74) Can exercise help back pain Yes/No

75) Have you had back pain in the past Yes/No

76) For how many years?

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1. What did you expect from this visit to the doctor:
2. Has she given you a solution to the problem: *yes/no*
3. Do you expect the doctor to do anything else:
4. Do you think the pain will go away: *yes/no.*
5. Did you do anything for your back before consulting the doctor:
6. What problems do you have in your life at the moment: *yes/no.*
7. Do theses problems bother you more than your back pain: *yes/no*
8. Have you heard of any other treatments for low back pain *yes/no.*
9. What?
10. What else would you like to know about low back pain: pain: *yes/no*
11. Is this pain having a big impact on your life: *Yes/No*
12. Is the pain stopping you from doing:
13. Work, *yes/no*
14. Housework, *yes/no.*
15. Exercise, *yes/no*
16. Social Activities, *yes/no*
17. Do you feel you have any control over the problem: *yes/no. yes/no*
18. Do you think this problem will heal 100%: *yes/no.*
19. Do you think you have permanent damage in your back: *yes/no.*
20. Do you think it is easy to hurt your back: *yes/no.*
21. What kind of damage do you think you have done:
22. Are you very worried about the pain: *yes/no*
23. Do you think this problem is likely to recur: yes/no
24. Do you think medication can help back pain a lot: yes/no
25. Do you spend a lot of time thinking about this problem: yes/no

Would you like to know:

26. How to lift things to prevent back problems: *yes/no*
27. What exercises you can do to help your back: *yes/no*
28. How to keep fit to keep your back healthy: yes/no
29. How you can help yourself when you have back pain: *yes/no*
30. How you can change the way you do certain things to prevent back
31. How to manage your job better to prevent back pain: *yes/no*
32. The best way to sleep at night when you have pain: *yes/no*
33. The best way to cough and sneeze when you have back pain: *yes/no*
34. When you should go back to your exercise: *yes/no*
35. How the back works: *yes/no*
36. More about the Spine: *yes/no*
37. The best way to manage your daily tasks when you have back pain:
38. Do you think you should lie in bed when you have back pain: *yes/no*
39. Is it difficult to get dressed easily with this pain: *yes/no*
40. With this pain do you stop going out socially: *yes/no*

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7.2.4 Occupations of Subjects answering Lifestyle Questionnaire

Occupation Specific	Count	Percent
Domestic Worker	13	16
Pensioner	12	15
Cleaner	5	6
Disability Pension	5	6
Factory Worker	5	6
Carpenter	3	4
Clerical Worker	3	4
Unemployed	3	4
Butchers Assistant	2	3
Construction Worker	2	3
Fisherman	2	3
Gemstone sorter	2	3
Labourer	2	3
Missing	2	3
Painter	2	3
Caregiver	1	1
Caretaker	1	1
Cashier	1	1
Cook	1	1
Farm Worker	1	1
Fish Packer	1	1
Foreman	1	1
General Assistant	1	1
Homemaker	1	1
Hospice Carer	1	1
Housewife	1	1
Maintenance Worker	1	1

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Plasterer	1	1
Sail maker	1	1
Shop Assistant	1	1
Supermarket Packer	1	1
Supervisor	1	1

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7.3 Appendices Stage 2

7.3.1 Information Sheet

WHAT AM I TRYING TO DO?

I am a researcher from the University of Cape Town, part of a team who are interested in finding out more about back pain in Ocean View. The doctor asked you to come and see me because either you have back pain or you have been given an information sheet to help you manage your pain. I do not want to know which sheet you have been given but we want to see if there is any difference between the two information sheets.

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WHAT WILL YOU BE ASKED TO DO?

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WHAT WILL YOU GET IF YOU TAKE PART?

I would like to give R50.00 to assist with transport to the clinic when you come back in four weeks. Otherwise there is no payment or reward for taking part in the study and there is no reason for you to take part unless you would like to help us understand the situation of people with back pain better. I will make all the information known (but of course not your name or address) to the local institutions that provide assistance to people with back pain. I hope that what we find might lead to changes being made, but I cannot promise this. In the short term there will be no direct benefit to you or your family.

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Participant Date

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Witness Date

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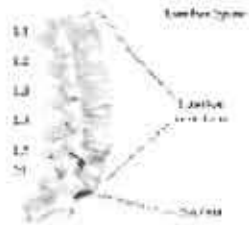
7.3.3 Appointment Card



Name:

Date:

Time:

Study into Low Back Pain in Ocean View

Debbie Yates BSc (Hons)

PHYSIOTHERAPIST

please phone ..... if you cannot keep the appointment

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7.3.4 Control Leaflet

7.6

S2 Norflex Co®

(orphenadrine citrate 35 mg, paracetamol 450 mg)

Relieves pain and stiffness; restores mobility

Normal adult dosage: 2 tablets three or four times daily.

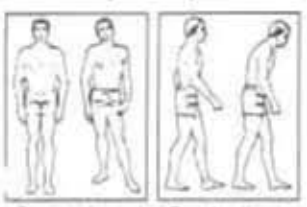
1. A healthy spine:
A healthy spine contains 3 subtle curves:

- a lower hollow (lordosis)
- a mid back roundness (kyphosis)
- a neck hollow (lordosis)

For the spine to remain healthy, these curves need to be maintained (but not exaggerated) at all times. The stomach and back muscles need to be strengthened in order to hold these curves and to protect the spine as a corset would. The following exercises will enable you to achieve an ideal posture, which is the first major step to a healthy back.

The ideal spine seen from the side (note the curves)

2. When standing and walking:



Correct Incorrect Correct Incorrect

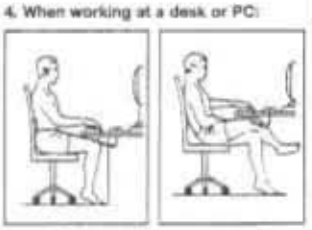
a. Maintain a slight low back hollow.
b. Lift up and out of the diaphragm.
c. Push shoulder blades down towards your hips.
d. Do not put hands on hips, fold arms or rest hands in pockets.
e. Avoid high heels.
f. Be symmetrical – stand equally on both legs.

3. When sitting:

Correct Incorrect

a. Sit in an upright chair with 90° at ankles, hips and knees.
b. Hold the hollow in the lower back – use a rolled up handtowel if necessary to achieve this.

4. When working at a desk or PC:



Correct Incorrect

a. Ensure desk is the correct height for you and chair fits under desk (no arm rests).
b. Monitor at eyeball height.
c. Forearms supported, with an angle larger than 90° at the elbows.
d. Chair on wheels so that you can face work squarely.

5. When driving:

Correct Incorrect

a. Sit close to the steering wheel.
b. Be symmetrical – do not have arm out of window.
c. Use a lumbar roll to support the lower back hollow if the seat is not fitted with a support.
d. On long trips stop hourly and walk around the car.

6. When lifting:

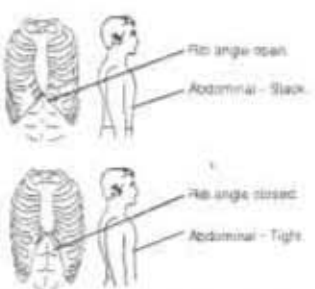
Correct Incorrect

a. Never lift a load that is too heavy for you.
b. Hold load close to your body.
c. Bend knees, squat and lift with the thigh muscles.
d. Brace stomach as you lift (helps to say DAD out loud to get the muscles working).
e. Avoid lifting heavy weights above waist height.
f. Be careful lifting objects out of car boot do not twist to remove object, may place foot in car boot to get near the load.

7. When sleeping:

a. Sleep on a very firm mattress.
b. Sleep on your side – not too rolled up, i.e. as straight as you can be.
c. You need sufficient pillows to fill the space between your ear and your shoulder, so that your head is not at an angle.
d. A pillow between the knees will help if you have back pain.
e. Lying on your back to relax with two pillows under the knees is good.

8. Rib Angle Tip (Bear in mind):



In all your exercises and in all that you do – try to keep the angle between your bottom ribs as small as possible. As you arch your mid back, you will open up the rib angle and strain your back while disabling your stomach from working. By pulling your ribs down, you will make your stomach muscle work and will make it stronger without even trying to. Be careful not to flatten your lower back hollow (lordosis) as you do this. Find your lower back position and then pull your ribs together and practice breathing in and out keeping the muscle tight. This trains the deep abdominal muscle, which is the most important one to strengthen for your back.

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Exercises for better back care

9 .Rotations:

Starting position

End position

a. Lie on your back with your knees bent.
b. Cross your legs (as a lady does) and drop both your legs to one side, while keeping your shoulders flat on the floor.
c. If you have one-sided back pain, only go to the side away from the pain (i.e. if the pain is on the left side, rotate to the right only) until the pain disappears and then go both ways.
d. Hold stretch for about 30 seconds.

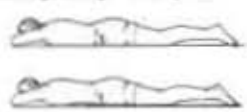
10. Hamstring and sciatic nerve stretch:

Starting position.

End position.

a. Lie on your back with both knees bent.
b. Bring one knee onto your chest and attempt to straighten the knee keeping the foot flexed.
c. Hold 5 seconds and swop legs.
d. You can pump the foot backwards and forwards to increase the stretch. This should produce a burning feeling down the back of the leg.

11. Abdominal strengthening – Tummy lifts:



a. Lie on your stomach with your forehead resting on your arms.
b. Suck your stomach up off the floor, pulling your navel towards your spine.
c. Hold the contraction for 5 seconds and relax.
d. Try to breathe while holding the contraction.
e. Your spine and hips should not move.

12. Abdominal strengthening – Crunches:

Method 1 (End position)

Method 2 (End position)

a. Lie on your back with knees bent and arms either beside your body or with fingertips resting lightly on your scalp.
b. Breathe in and crunch your ribs towards your pubic bone – trying to roll one vertebrae at a time off the floor. Breathe out slowly as you do this.
c. Only come up until your shoulder blades start to lift off the floor.
d. Imagine you have an orange between your chin and your chest so that your neck position does not change.
e. Do the movement slowly and stop if your muscles start to tremble as this indicates fatigue. You should take 5 counts to come up and 2 to roll back down again.

13. Spine stretch:

Starting position

End position

a. Sit against a wall, knees bent, and backside right against the wall.
b. Try to push your shoulders flat against the wall and press the base of your skull into the wall.
c. Keep your middle back firmly against the wall.
d. Do not arch this area in order to get your shoulders back.
e. Try to lift up through your nose, and pull your thighs right into your stomach.
f. Hold the stretch for 30 seconds and relax. Repeat 5 times.

14. Shoulder stabilisation:

Starting position

End position

a. Lie on your stomach, elbows under shoulders, taking weight through your elbows.
b. Hold your stomach tight and lift your breastbone up, keep your chin in, making a double chin.
c. Try to hold your body stable as if you were balancing a full glass on your lower back and stretch one arm forward to reach the wall in front of you.
d. Hold arm stretched out for 3 – 10 seconds and then replace it and repeat using the other arm.
e. Ensure you do not collapse the supporting arm shoulder – keep the shoulder blade flat against your spine and you breastbone up.

15. Extentions:

Standing (End position)

Lying (End position)

a. Lie on your stomach, hands on floor under your shoulders.
b. Straighten your arms, producing an arch in your back as you do.
c. Your hips should stay on the floor and your back muscles should remain completely relaxed.
d. Hold for 5 seconds and relax back down.
Repeat 5 times.
e. Another way to do this exercise is to place your hands on your buttocks in the standing position, and arch backwards.
f. Push forwards with your hands and relax your back muscles.
This should be done every hour especially if you have been sitting. Hold for 2 seconds and straighten. Repeat 3 times.

Good luck and call for help if you need any!

Revised by Sue Fuller-Good BSc (Physio) UCT Physiotherapy and Holistic Health Centre. (011) 803 5725 March 2001.

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7.3.5 New Information Leaflet

LOW BACK PAIN

Back pain is very common and many people (70%) suffer from it every year. Most people recover within 3 to 4 weeks. Only a small amount of people (5%) who have back pain will need an operation to get rid of the pain.

Back pain often returns, so understanding what can cause it and how to deal with it may make it easier to manage the pain. Looking after your back is very important in order to keep your spine as healthy as possible. This is something you can do for yourself.

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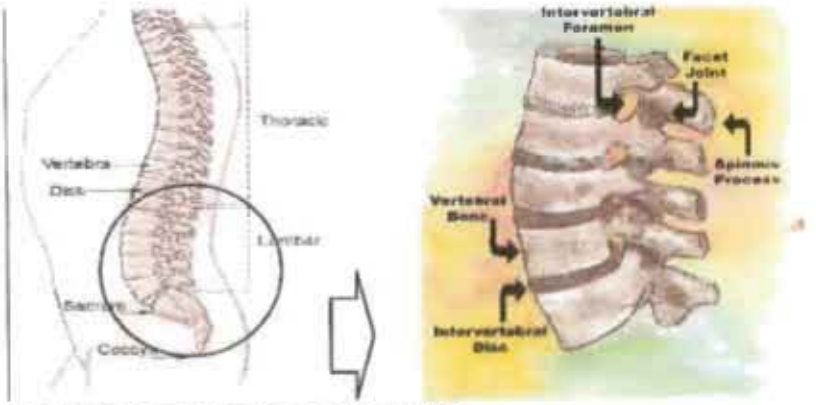

WHAT HAVE I DONE TO MY BACK?

Many things in your back can be a source of pain.

1. The *Intervertebral Discs* can get hurt or ***inflammed*** (swollen) when they are put under a lot of stress e.g. with lifting heavy things, working in an awkward postion or sitting incorrectly for a long time. This is a common problem and is often the cause of pain but most of the time is not serious.

The *ligaments* and smaller *facet joints* may also be injured.

2. *Muscle Spasm* - when the muscles are very tight, can occur with an injury, bad posture and worry.

3. *Degeneration* or wear and tear/old age After many years of stress and strain, the joints of your spine can be worn out a little and this can cause pain. This is called osteo-arthritis.

These problems do not cause death and are not always seen on an X Ray.

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DEALING WITH THE PAIN

❖If your pain is very bad you may need some pills. Tablets called **Anti-inflammatories** can be helpful. They must be taken with food and only as often as the doctor tells you to. Taking too many at once may be harmful.

❖**Heat:** a hot water bottle, on your back when you are sitting, for at least half an hour 2 – 3 times a day is useful. Put a small towel around the bottle to prevent it from burning. Keep your back warm at all times. Keep your back dry, covered and do not sit in a draught.

❖**Keep moving:** continue with normal activities as far as possible - staying in bed does not help you get better and may slow down your recovery. Moving is good. Change position every 30mins. Try to avoid doing anything that causes a lot of pain. You will have some discomfort but this is not dangerous.

❖**Avoid aggravating movements:** Bending forwards and twisting are usually movements that should be limited.

❖**Keeping your body relaxed:** When we are in pain we stiffen up but this can make things worse. Take big, slow, deep breaths and relax your shoulders as well.

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Massage: rubbing a painful area may be useful

Sleeping: Lie on your back or side with pillows under or between your knees.

Dressing: sit down and cross your legs to put on your shoes and socks.

Support: use a small cushion/rolled up towel/foam roll behind the bottom of your back when sitting at home or in the car.

Posture: avoid sitting on a chair that is too low or soft.

Bend knees: avoid sitting with your legs straight in front of you – for example on a table. Keep your knees bent.

Reading: if you read in bed, put a pillow under your knees and try not to bend your head forwards.

Coughing and Sneezing: arch your back when you need to cough or sneeze

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MANAGING POSTURE AT WORK AND HOME TO KEEP YOUR SPINE HEALTHY

☆ Avoid bending over - keep your work surface high.

☆ When you are doing heavy physical work you should also try to keep your back straight.

☆ Even if you are working low down, keep your back straight.

☆ When lifting, keep your lower back straight, take a deep breath and tighten your tummy muscles before you lift, bend your knees. Avoid twisting your spine.

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☆ Keep your back as straight as possible during all activities



☆ Get help to lift heavy objects

☆ Get up and Stretch every half an hour when sitting.

☆ Sit with a good posture- with your back straight and supported

If the pain continues for more than six weeks or your pain gets worse return to your doctor.

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IMPROVING THE HEALTH OF YOUR SPINE

Weight: keep to your optimum weight -being overweight puts extra strain on the joints and discs. If you are overweight you are more likely to suffer from back pain.

Diet: eat as well as you can, the muscles, bones, discs and ligaments in your back need to be fed to keep them healthy and strong.

Smoking: it has been proved that the chemicals in cigarette smoke reduce the circulation in your spine so that it does not get important food.

Exercise: regular exercise helps to keep the joints in your spine mobile and strengthens the muscles around the spine making it easier to lift safely and to keep a good posture. There are specific exercises that may be good for your back.

Sleep: Get plenty of sleep. A lack of sleep increases a chemical in your body that is not good for your spine.

Back Care: Follow advice about lifting heavy objects at home and work and advice about your posture when doing housework, gardening and other activities.

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Sleep on a firm surface: if your mattress is too soft put a thin board or newspapers under the mattress.

EXERCISES FOR YOUR BACK

Once your back pain has settled down there are exercises that may be useful for you back but while you have the pain the best thing for your back is to keep moving as much as you are able.

Remember:

MEDICATION

HEAT

MASSAGE

MOVEMENT

RELAXATION

POSTURE

CORRECT LIFTING AND WORKING POSITIONS

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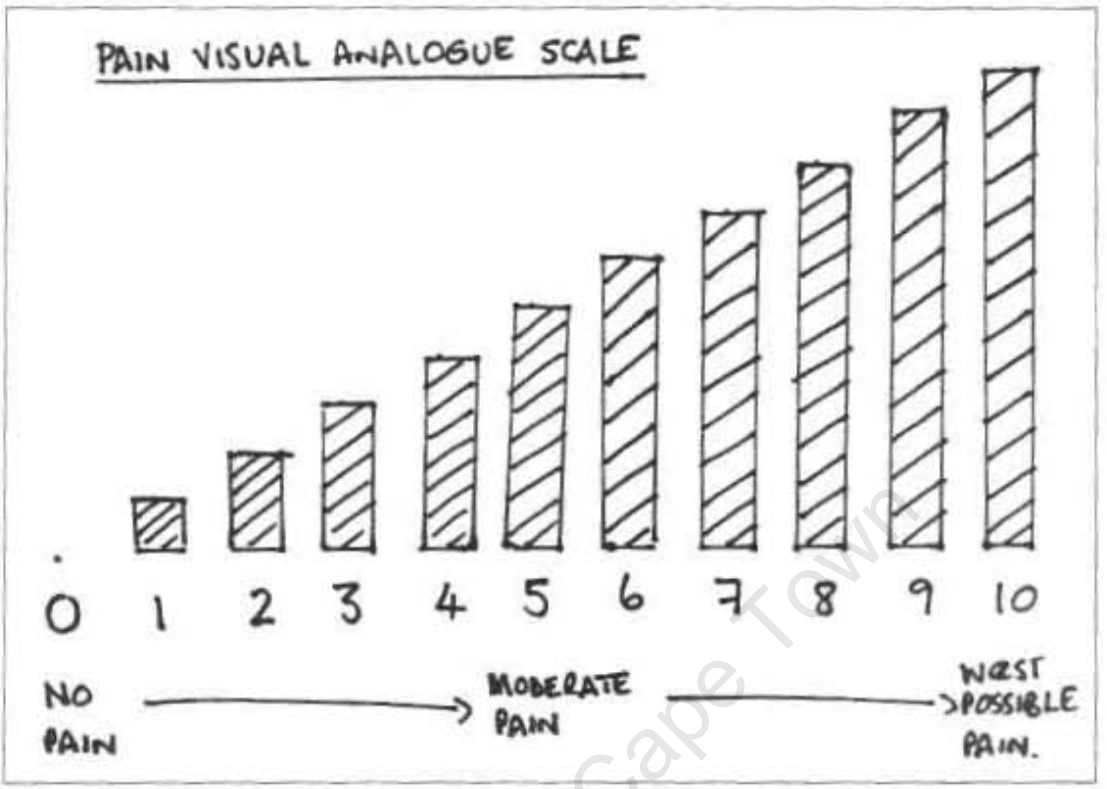
7.3.6 Pain VAS



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7.3.7 EQ5D

Which statements best describe your own state of health TODAY?

Mobility

I have no problems in walking about	❑
I have some problems in walking about	❑
I am confined to bed	❑

Self-Care

I have no problems with self-care	❑
I have some problems washing or dressing myself	❑
I am unable to wash or dress myself	❑

Usual Activities (*e.g. work, study, housework, family or leisure activities)*

I have no problems with performing my usual activities	❑
I have some problems with performing my usual activities	❑
I am unable to perform my usual activities	❑

Pain/Discomfort

I have no pain or discomfort	❑
I have moderate pain or discomfort	❑
I have extreme pain or discomfort	❑

Anxiety/Depression

I am not anxious or depressed	❑
I am moderately anxious or depressed	❑
I am extremely anxious or depressed	❑

Compared with my general
level of health over the past 12 months,
my state of health today is:

Better	❑
Much the same	❑
Worse	❑

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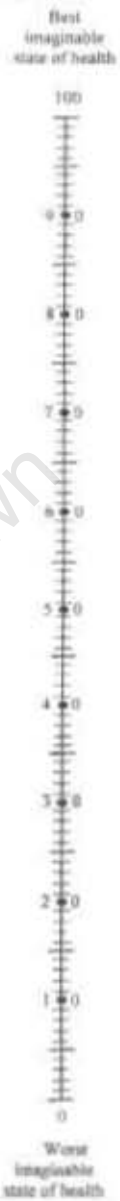
Indicate on this scale, in your opinion, how good or bad your own health is today.



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7.3.8 Roland Morris Disability Questionnaire

THE ROLAND-MORRIS LOW BACK PAIN AND DISABILITY QUESTIONNAIRE

Tell me about your activities today:

- Do you stay at home most of the time because of your back
- Do you change position frequently to try to get your back comfortable
- Do you walk more slowly than usual because of my back
- Because of your back, are you not doing any jobs that you usually do around the house
- Because of your back do you use a handrail to get upstairs
- Because of your back, do you lie down to rest more often
- Because of your back, do you have to hold on to something to get out of an easy chair
- Because of your back, do you try to get other people to do things for me
- Do you get dressed more slowly than usual because of your back
- Are you only able to stand up for short periods of time because of my back
- Because of my back, do you try not to bend or kneel down
- Do you find it difficult to get out of a chair because of your back
- Is your back painful almost all of the time
- Do you find it difficult to turn over in bed because of my back
- Is your appetite not very good because of my back
- Do you have trouble putting on my socks (or stockings) because of the pain in your back
- Can you only walk short distances because of my back
- Can you sleep less well because of my back
- Because of your back pain, do you need someone to help you get dressed
- Do you sit down for most of the day because of your back
- Do you avoid heavy jobs around the house because of your back
- Because of back pain, are you more irritable and bad tempered with people than usual
- Because of my back, do you go upstairs more slowly than usual
- Do you stay in bed most of the time because of your back

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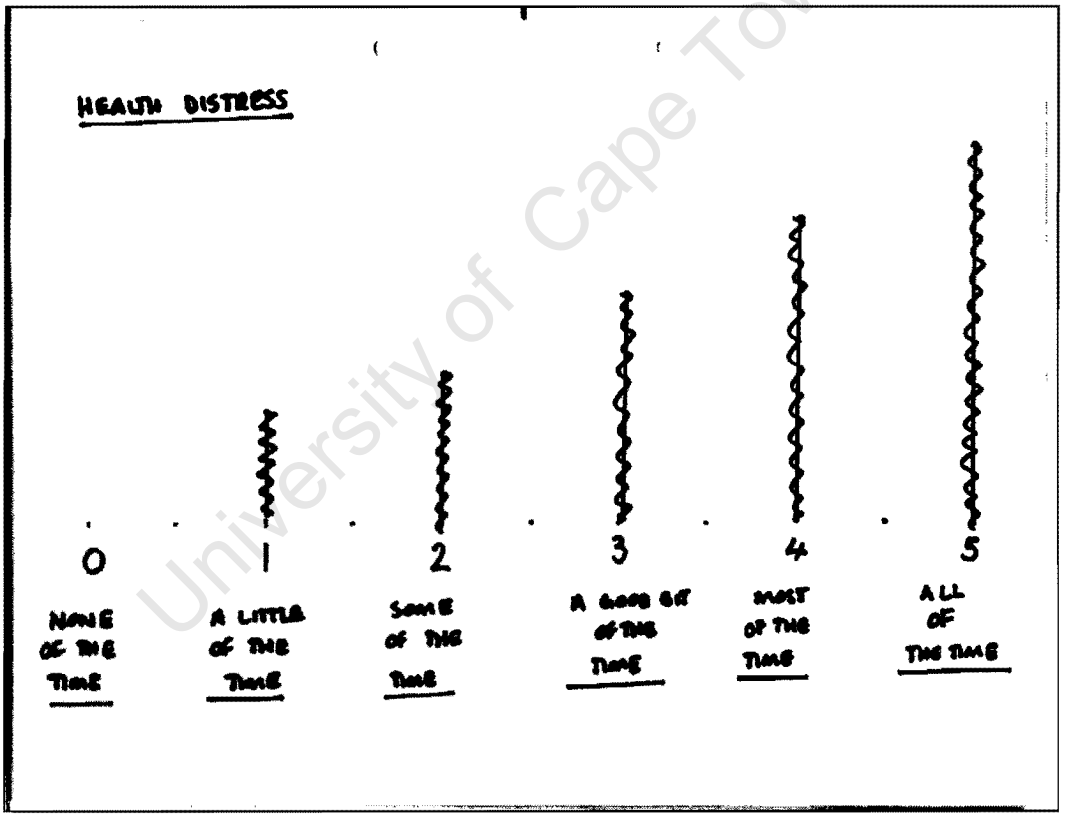
7.3.9 Stanford Health Distress Questionnaire

HEALTH DISTRESS

How often during the past week/month:

1. Were you discouraged by your back pain?
2. Were you fearful about future LBP?
3. Was your LBP a worry in your life?
4. Were you frustrated by your LBP?

7.3.10 Stanford Health Distress VAS



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7.3.11 Stanford Chronic Disease Self-Efficacy Scale Questionnaire

CONFIDENCE INTERVALS

1. How confident are you that you can manage your LBP so you do not need to see the doctor so often?
2. How confident are you that you can keep your LBP from interfering with the things you want to do at work?
3. How confident are you that you can keep your LBP from interfering with the things you want to do at home?
4. How confident are you that you can do things other than taking medication to reduce your LBP?
5. How confident are you that it is necessary to have an X Ray when you have LBP?
6. How confidant are you that you can do gentle exercise without making your LBP worse?

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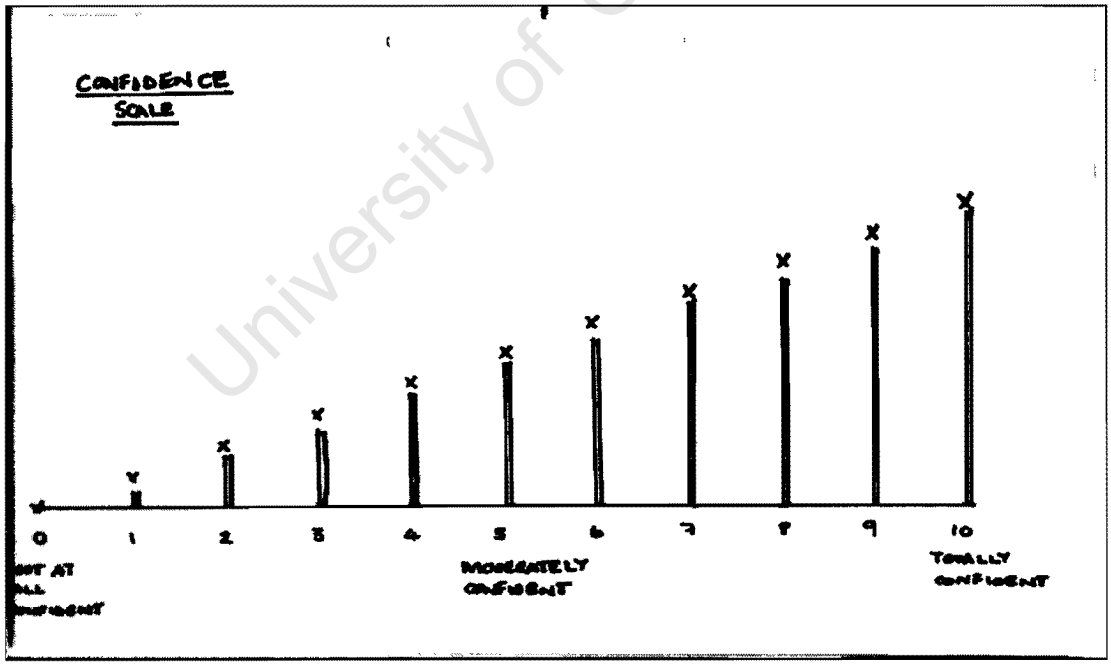
7.3.12 Stanford Chronic Disease Self-Efficacy Scale VAS



7.3.13 Multidimensional Health Locus of Control Scale (MHLC)

MULTIDIMENSIONAL HEALTH LOCUS OF CONTROL FORM

Instructions: I am going to ask you some questions about your back pain (LBP) with which you may agree or disagree. I am only interested in your opinion there are no right or wrong answers. (Show VAS) If you agree strongly you can choose no.1, a little no.3 or if your agreement is medium no.4. If you disagree strongly you can choose no.6, a little no.4 or if your disagreement is medium no 5.

1=STRONGLY DISAGREE (SD)
2=MODERATELY DISAGREE (MD)
3=SLIGHTLY DISAGREE (D)
4=SLIGHTLY AGREE (A)
5=MODERATELY AGREE (MA)
6=STRONGLY AGREE (SA)

		SD	MD	D	A	MA	SA
1	If my LBP gets worse I can help it get better.	1	2	3	4	5	6
2	My LBP is going to get better or worse no matter what I do	1	2	3	4	5	6
3	If I see the doctor regularly, I am less likely to have LBP.	1	2	3	4	5	6
4	My LBP can get better or worse for no reason.	1	2	3	4	5	6
5	Whenever my LBP increases I should come to the clinic.	1	2	3	4	5	6
6	I am responsible for any change in my LBP	1	2	3	4	5	6
7	Other people can help my LBP get better or worse.	1	2	3	4	5	6
8	When I get LBP it is my own fault.	1	2	3	4	5	6
9	Luck plays a role with any change in my LBP	1	2	3	4	5	6
10	The Doctor controls my LBP.	1	2	3	4	5	6
11	If my LBP improves it is because I am fortunate.	1	2	3	4	5	6
12	The main thing that affects my LBP is what I do.	1	2	3	4	5	6
13	If I take care of myself I can avoid LBP.	1	2	3	4	5	6
14	Following the doctor's orders is the best way to help my LBP	1	2	3	4	5	6
15	If my LBP gets worse that is the way life is.	1	2	3	4	5	6
16	If I am lucky, my LBP will get better.	1	2	3	4	5	6
17	If my LBP gets worse, it is because I have not been taking proper care of myself.	1	2	3	4	5	6
18	I can only do what my doctor tells me to do for my LBP	1	2	3	4	5	6

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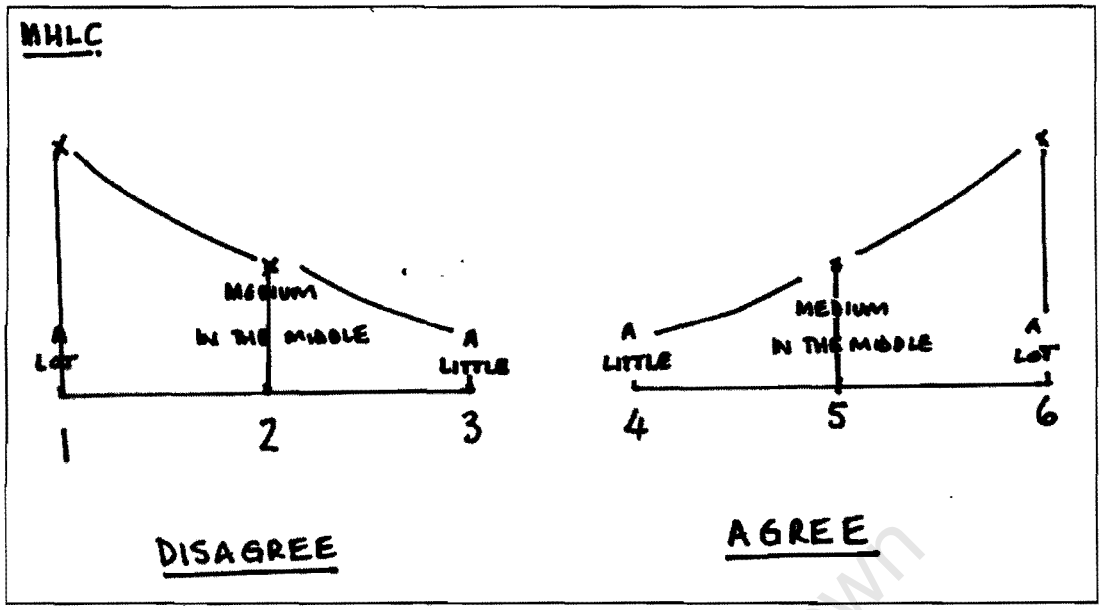
7.3.14 Multidimensional Health Locus of Control Scale VAS



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7.3.15 Questions asked on the Second Visit

Did you understand the questionnaire?
Was the information of any use to you?
Do you feel you understand the problem of your LBP?
What information from the leaflet did you use most?
Was there any information in the leaflet that you specifically followed?
Was there any other information that was not on the leaflet that you think would hav been useful to include?
Do you have any other comments to make about the leaflet?

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7.3.16 Specific Occupations of Subjects in Randomised Control Trial

Occupation Specific	Count
Fish sorter	1
Moulder	1
Cleaner	2
Grocery Supervisor	1
Chef	1
Pension	14
Shop Ass	2
Domestic W	12
Office Ass	2
Voluntary	2
Cook	4
Electrician	1
Homemaker	4
Horse Groomer	1
Gardener	3
Disability Grant	4
Till Packer	2
Fisherman	3
Child Carer	1
Sales	1
Nurse	2
Clerk	2
General Shop	1
Builder	1
Panel Beater	2

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Occupation Specific	Count
Day Mother	1
Unemployed	3
Carpenter	1
Security Guard	1
Bakery-Piper	2
Splice/Rigger	1
Kaolin Factory Worker	1
Receiver Supermarket	1
Bakery- Mixer	1
Bakery- general	1

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7.3.17 Subjects Perceived Causes of LBP

Note that this question was added later on in study and 13 did not get asked this question.

Description of Cause of Pain	Count	Cumulative
Growing Pains	1	1
Does Not Know	23	24
Large Breasts	1	25
Lifting	1	26
Fall	1	27
Weight	1	28
Does not know – maybe Stress	1	29
Fall/Lifting	1	30
Standing	1	31
Lifting Washing Machine	1	32
Does Not Know - pain started after 2 pregnancies	1	33
Pulling carpets at home	1	34
Winching and pushing boats, carrying crates of cold drin	1	35
Pain started after last baby. ? Weight	1	36
Lifting something heavy	1	37
Lifting at work	2	39
Fall at work fire fighting on mountain	1	40
Fall climbing up a hill	1	41
Lifting when working at a bakery	1	42
Bending when younger/also after last child	1	43
Slipped Disc	1	44
Lifting baby	1	45
Lifting machinery in Navy	1	46

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Picking up cases of eggs at work	1	47
MVA initially, now does not know	1	48
Pulled out a heavy bed at work	1	49
Lifting heavy things at the bakery	1	50
Lifting husband who has had a stroke	1	51
Fell down stairs many years ago	1	52
Wet clothes from job as a fisherman and carry heavy objects	1	53
Heavy duty work	1	54
Moving stove and furniture	1	55
Carry lots of files at work	1	56
Carrying heavy things for work - fishing boat/meat	1	57
Picking up things	1	58
Lifting old people at work	1	59
Lifting at work in Naval Dockyard	1	60
Lifting rocks/using jackhammer	1	61
Lifting children at work	1	62
Lifting buckets of caramel for cake icing at work	1	63
Weather/Arthritis/Family problem as parents have it	1	64
Working in a cold room/lifting heavy buckets of cream	1	65
Weight/lifting crates of wine and beer at work	1	66
Lifting heavy things at stone factory	2	68
Polishing cars with back in a bad position	1	69
Using pick and shovel at work	1	70
Total	70	

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7.3.18 Comments about Leaflets

COMMENTS	Count
Wife had to read it to him but was too tired after work, did not look at picture	1
Knows how to deal with back	1
None, tried to follow advice, exercise is important	1
Did read pamphlet but cannot remember it	1
Because of the pamphlet is more careful about the way she does things but wants to know if she will have pain for the rest of her life or if it will get better she does the exercise	1
Did not read everything, was useful but cannot remember what.	1
Does not think his pain can be helped as he carried lots of heavy meat as a butcher	1
Reminded him what to do - gave him encouragement to follow the advice - would like to know why he has pain was told by a doctor he would be fine af 3 months - 7 yrs ago.	1
Wants more information about what to do in the morning - has tried to follow leaflet and do things the way advised	1
Someone took the leaflet before she had the chance to read it	1
Encouraged son and daughter to read it – no other information is necessary	1
Has tried to cut down on smoking - would like to know more about causes of LBP	1
Pamphlet good - has not thrown it away	1
Would like an X Ray	1
Is addicted to tablets and would like to manage pain some other way	1
Has put it in a safe place, looks at it when she feels down about her back as has very helpful hints	1
Read pamphlet once, has a very busy job and can only read at night and the it is hard to concentrate	1
Did not do exercise because she is scared of hurting back	1
Would like to talk to someone about the problem of LBP	1
The pamphlet helped a lot and was easy to follow	1

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Did not think the pamphlet was clear	1
Can't remember	3
Did not find anyone to translate information for her	1
Lost Pamphlet	1
Would like to know cause of pain	1
Would like more specific information on how to look after her back with her j	1
Did not read it	2
Yes, other information would help but could not be specific about what information	1
Could not think of other info would want included	31
Would like to know more exercises to do	1

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Author: deborah
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Comments:
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